AMERICAN

RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, *Editor.*

ASSISTANT EDITORS:

JAMES T. HODGE, *For Mining and Metallurgy.*
CHARLES T. JAMES, *For Manufactures and the Mechanic Arts.*
M. BUTT HEWSON, *For Civil Engineering.*

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JOHN H. SCHULTZ & CO.

Room 12, Third Floor,

No. 136 Nassau Street.

IRON BRIDGES, BRIDGE & ROOF BOLTS, etc. STARKS & PRUYN, of Albany, New York. having at great expense established a manufactory with every facility of Machinery for Manufacturing Iron Bridges, Bridge and Roof Bolts, together with all kinds of the larger sizes of Screw Bolts, Iron Railings, Steam Boilers, and every description of Wrought Iron Work, are prepared to furnish to order, on the shortest notice, any of the above branches, of the very best of American Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several Iron Bridges for the Erie Canal, Albany Basin, etc. —and a large amount of Railroad Bridge Bolts, all of which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

Charles Cook, Nelson J. Beach, Jacob Hinds,	Canal Commissioners of the State of New York.
Willard Smith, Esq.,	Engineer of the Bridges for the Albany Basin.
Messrs. Stone & Harris, Mr. Wm. Howe,	Railroad Bridge Builders, Springfield, Mass.
Mr. S. Whipple,	Engineer & Bridge Builder, Utica, N. Y.

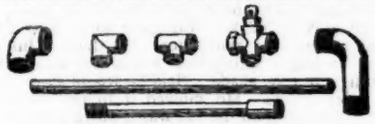
January 1, 1849.

TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.

PASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to ¼ in calibre and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T's, L's, and other fixtures to suit, fitting together, with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by

MORRIS, TASKER & MORRIS.

Warehouse S. E. Corner of Third & Walnut Streets,

PHILADELPHIA.

To Railroad Companies, etc.

The undersigned has at last succeeded in constructing and securing by letters patent, a Spring Pad-lock which is secure, and cannot be knocked open with a stick, like other spring locks, and therefore particularly useful for locking Cars, and Swiiches, etc.

Companies that are in want of a good Pad-lock, can have open samples sent them that they may examine and judge for themselves, by sending their address to

C. LIEBRICH,
46 South 8th St., Philadelphia.

November 3, 1849. 6m*

Mattewan Machine Works.

THE Mattewan Company have added to their Machine Works an extensive LOCOMOTIVE ENGINE department, and are prepared to execute orders for *Locomotive Engines* of every size and pattern—also *Tenders, Wheels, Axles*, and other railroad machinery, to which they ask the attention of those who wish such articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC., Of any required size or pattern, arranged for driving *Cotton, Woollen, or other Mills*, can be had on favorable terms, and at short notice.

COTTON AND WOOLLEN MACHINERY, Of every description, embodying all the modern improvements, second in quality to none in this or any other country, made to order.

MILL GEARING,

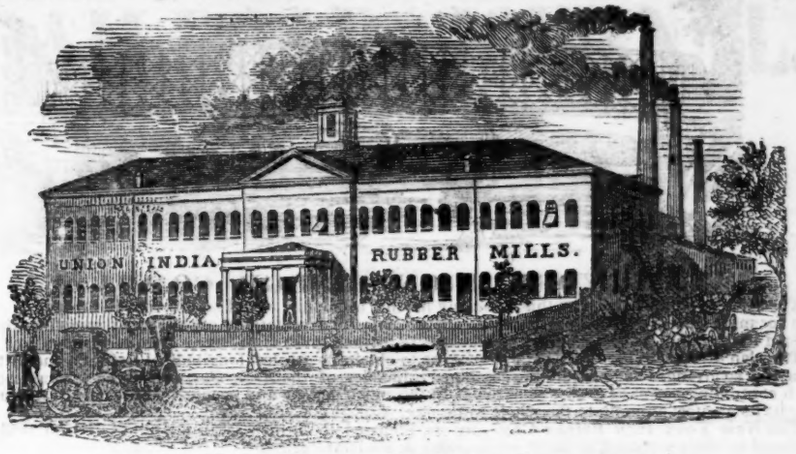
Of every description, may be had at short notice, as this company has probably the most extensive assortment of patterns in this line, in any section of the country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Plaining, Cutting and *Drilling Machines*, of the most approved patterns, together with all other tools required in machine shops, may be had at the Mattewan Company's Shops, Fishkill Landing, or at 66 Beaver street, New York.

WM. B. LEONARD, *Agent.*

☞ HEAD QUARTERS FOR RUBBER GOODS. ☜



The Union India Rubber Company,

MANUFACTURERS AND DEALERS IN EVERY VARIETY OF

GOODYEAR'S PATENT METALLIC RUBBER FABRICS,

Which they offer on the most liberal terms at their Warehouse,

NO. 19 NASSAU STREET, NEW YORK.

Articles which this Company has the exclusive right to make comprise in part

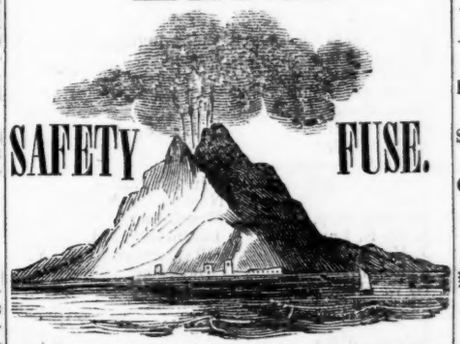
Beds,	Overcoats,	Life Preservers,	Mail Bags,	Camp Blankets,
Pillows,	Leggins,	Boat Floats,	Breast Pumps,	Travelling Bags,
Cushions,	Syringes,	Souwesters,	Saddle Bags,	Wading Boots,
Caps,	Canteens,	Gun Cases,	Clothing of all kinds,	Horse Covers,
Tents,	Buoys,	Portable Boats,	Carriage Cloth, assor.	Piano Forte Covers,
Bottles,	Maps,	Horse Fenders,	Hospital Sheeting,	Railroad Gum,
Tubs,	Sheet Gum,	Water Tanks,	Mattrass Covers,	Hose, all kinds,
Caps,	Tarpaulins,	Army Goods,	Bathing Caps,	Shower Baths,
Pants,	Life Jackets,	Navy Goods,	Baptismal Pants,	Chest Expanders.

Together with *all new applications of the Patent Rubber*, which with Boots and Shoes, Packing, Machine Belting, Suspenders, Gloves and Mittins, Tobacco Wallets, Balls, Baby Jumpers, Elastic Bands, etc., etc., will be sold to the Trade at Factory prices.

*** All orders for special articles to be manufactured, should be accopanied with full descriptions and drawings.

October 20, 1849.

ETNA



SAFETY FUSE.

THIS superior article for igniting the charge in wet or dry blasting, made with DUPONT'S best powder, is kept for sale at the office and depot of

REYNOLDS & BROTHER,

☞ *Sole Manufacturers,* ☜

No. 85 Liberty St.
NEW YORK.

And in the principal cities and towns in the U. States.

☞ The Premium of the AMERICAN INSTITUTE was awarded to the *Etna Safety Fuse* at the late Fair held in this city.

November 3, 1849. 1y

RAILROAD
India-rubber Springs.

IF any Railroad Company or other party desires it, the NEW ENGLAND CAR COMPANY will furnish India-rubber Car Springs made in the form of washers, with metalic plates interposed between the layers, or in any other form in which they can be made; in all cases guaranteeing the right to use the same against any and all other pretended rights or claims whatsoever.

F. M. Ray, 98 Broadway, New York.
E. CRANE, 99 State Street, Boston.

1849.

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished at short notice; also, STEEL SPRINGS of various kinds; and

SHAFTING FOR FACTORIES.

☞ *The above may be had at order at our Car Factory,*

REUEL DEAN,
ELIJAH PACKARD,
ISAAC MILLS,
} SPRINGFIELD, MASS.

1y48

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants, Banks and Jewelers use. The subscriber manufactures and has constantly on hand, a large assortment of Iron Safes, of the most approved construction, which he offers at much lower rates than any other manufacturer. These Safes are made of the strongest materials, in the best manner, and warranted entirely fire proof and free from dampness. Western merchants and the public generally are invited to call and examine them at the store of E. Corning & Co., sole agents, John Townsend, Esq., or at the manufactory.

Each safe furnished with a thief-detector lock, of the best construction.

Other makers' Safes repaired, and new Keys and Locks furnished at the shortest notice.

H. W. COVERT,
cor. Steuben and Water sts. Albany.

August 24, 1848.

NEW YORK IRON BRIDGE COMPANY.

The Bridges manufactured by this Company having been fully tested on different Railroads, by constant use for more than two years, and found to answer the full expectations of their most sanguine friends, are offered to the public with the utmost confidence as to their great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time it is so arranged as to secure the combined principles of the *Arch, Suspension and Triangle*, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

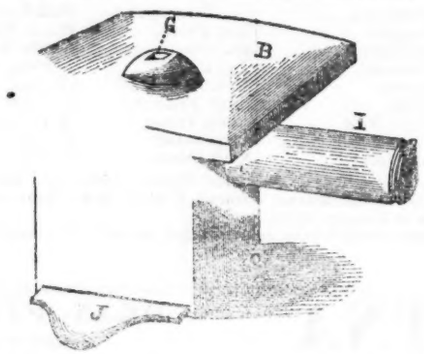
THE NEW YORK IRON BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, at short notice, and at moderate prices.

Models, and pamphlets giving full descriptions of the above BRIDGE, with certificates based on actual trial undoubted sources, will be found at the office of the Company, 39 Jauncey Court, Wall st., or of W. BROTHERS, 19 *Nassau Street*, where terms of contract will be made known, and where orders are

M. M. WHITE,
Agent for the Company.

'49.

'ris' Patent Rotary Blacksmith Tuyere.



LETTERS Patent were issued January 9, 1849, to E. HARRIS, of Springfield, for an Improved Rotary Blacksmith Tuyere. Since that time there have been some hundreds put in operation, giving satisfaction and full proof of superiority over all others.

This Tuyere is so arranged that by one movement it can be changed from the largest work to the smallest; at the same time the fire is changed in proportion, thereby making a great saving in coal. Words cannot convey the full merits of this Tuyere; nor is it deemed necessary to speak in disparagement of other Tuyeres, as every smith is capable of judging for himself, and will give merit where merit is due.

I will simply say that there has not been a single instance where I have had my Tuyere put in use but it has given full satisfaction, and is recommended by all who have used them, as being superior to any other ever introduced. I would invite all to give them a trial; and the names of those using them being given, I hope it may induce others to try them; they recommend themselves.

Western Railroad Shop,	Springfield,	Mass.
" "	Pittsfield,	"
Connecticut val."	Springfield	"
" "	N. Hampton	"
Hartford "	Hartford,	Conn.
New Haven "	New Haven	"
Norwich and Worcester,	Norwich	"
N. York and N. Haven,	New Haven	"
Saratoga and Whitehall,	Saratoga,	N. Y.
Vermont Central,		
Hudson and Berkshire,	Hudson,	
L. Kingsley,	Canton,	Mass.
Hadley Falls Co. Ireland,	W. Springfield,	Mass.
Sidney Patch,	Boston,	"
Ames Manuf. Cor.,	Chickopee,	"
American Machine w'ks,	Springfield	"
Dean, Packard & Mills	"	"
G. Frank Bradley,	N. Haven,	Conn.
Andrew Baird,	"	"
Collis & Lawrence	"	"
Slate & Brown,	Windsor Locks,	
Gage,	Nashua,	N. H.
Machine shop,	Manchester,	"
Louis F. Lanney,	Baltimore,	Md.
J. H. Baerdid,	179 Chambers st.	N. Y.
J. Fanning	Rochester,	"
G. W. Hunt	41 Gold st.	"
Chamberlain & Waldo,		"
P. S. Burges, carriage maker,		"
Samuel Miller,		"
J. Leggett,	Steverson falls,	"
J. E. Harris,	Hillsdale,	"
John L. Graham,	Albany,	"
David Dalsell,	South Egremont,	Mass.
Roys & Wilcock,	Berlin,	Conn.

Agents for the sale of Tuyeres:
B. B. Stevens in New York and Connecticut.
W. S. Seymour in Massachusetts and R. Island.
A. J. VanAllen has the Agency for the Western and Southern States, and is now travelling through those States. Any communication addressed to the patentee will receive prompt attention.

E. HARRIS, Patentee,
Springfield, Mass.

November 23, 1849.

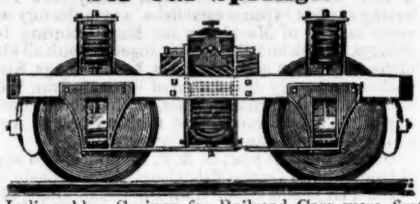
CHRONOMETERS.

MERCHANTS, Ship Owners, Captains and others, are invited to examine the advantages offered in the purchase of Chronometers, by HEWITT & SON, Makers, 92 Wall Street, (up stairs,) in their superior quality and great reduction of price.

H. & S. have for many years been engaged in the manufacture of Chronometers, for the first houses in the trad and also, for the Navy of most Nations, and have received numerous rewards for their superior performance. Their Chronometers may be obtained from the Observatory at Liverpool, by order from H. & S., and at City Road, London. They are warranted to give satisfaction; but if not approved of, will be exchanged in New York, London, or Liverpool.

Rating, Cleaning and Repairs, at *low charges*.
The Trade supplyed on the most liberal terms.
November 17, 1849.

F. M. Ray's Patent India-rubber Car Springs.



India-rubber Springs for Railroad Cars were first introduced into use, about two years since, by the inventor. The New England Car Company, now possesses the exclusive right to use, and apply them for this purpose in the United States. It is the only concern that has tested their value by actual experiment, and in all arguments in favor of them, drawn from experience of their use, are in those cases where they have been furnished by this company. It has furnished every spring in use upon the Boston and Worcester road, and, in fact, it has furnished all the springs ever used in this country, with one or two exceptions, where they have been furnished in violation of the rights of this company; and those using them have been legally proceeded against for their use, *as will invariably be done in every case of such violation.*

The Spring formed by alternate layers of India-rubber discs and metal plates, which Mr. Fuller claims to be his invention, was invented by Mr. Ray in 1844.—In proof of which we give the deposition of Osgood Bradley, of the firm of Bradley & Rice, of Worcester, Mass., car manufacturers, and men of the highest respectability. In this deposition, in relation to the right of parties to use these springs, he says:

"I have known Mr. Ray since 1835. In the last of May or the commencement of June, 1844, he was at my establishment, making draft of car trucks. He staid there until about the first of July, and left and went to New York. Was gone some 8 or 10 days, and returned to Worcester. He then on his retnrn said he had a spring that would put iron and steel springs into the shade. Said he would show it to me in a day or two. He showed it to me some two or three days afterwards. It was a block of wood with a hole in it. In the hole he had three pieces of India-rubber, with iron washers between them, such as are used under the nuts of cars. Those were put on to a spindle running through them, which worked in the hole. The model now exhibited is similar to the one shown him by Ray. After the model had been put into a vice, witness said that he might as well make a spring of putty. Ray then said that he meant to use a different kind of rubber, and referred to the use of *Goodyear's Metallic Rubber*, and that a good spring would grow out of it." There are many other depositions to the same effect.

The history of the invention of these springs, together with these depositions, proving the priority of the invention of Mr. Ray, will be furnished to all interested at their office in New York.

This company is not confined to any particular form in the manufacture of their springs. They have applied them in various ways, and they warrant all they sell.

The above cut represents precisely the manner in which the springs were applied to the cars on the Boston and Worcester road, of which Mr. Hale, President of this road speaks, and to which Mr. Knevitt refers in his advertisement. Mr. Hale immediately corrected his mistake in the article quoted by Mr. Knevitt, as will be seen by the following from his paper of June 8, 1848. He says:

INDIA-RUBBER SPRINGS FOR RAILROAD CARS.—"In our paper yesterday, we called attention to what promises to be a very useful invention, consisting of the application of a manufacture of India-rubber to the construction of springs for railroad cars. Our object was to aid in making known to the public, what appeared to us the valuable properties of the invention, as they had been exhibited on trial, on one of the passenger cars of the Boston and Worcester railroad. As to the origin of the invention we had no particular knowledge, but we had been informed that it was the same which had been introduced in England, and which had been subsequently patented in this country; and, we were led to suppose that the manufacturers who have so successfully applied this material, in the case to which we referred had become possessed of the right to use that patent. It will be seen from the following communication, addressed to us by a member of the company, by which the Worcester railroad was supplied with the article upon which our remarks were based, that we were in an error, and that the springs here introduced are an American invention, as well as an American manufacture. How far the English invention may differ from it we have had no opportunity of judging."

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HENRY V. POOR, Editor.

ESTABLISHED 1831.

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SECOND QUARTO SERIES, VOL. VI., No. 13.] SATURDAY, MARCH 30, 1850. [WHOLE No. 728, VOL. XXIII.

ASSISTANT EDITORS,

J. T. HODGE, *For Mining and Metallurgy.*

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M. BUTT HEWSON, C. E., *For Civil Engineering.*

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & Co., 136 NASSAU ST.

Saturday, March 30, 1850.

Northwestern Lead Mines.

Continued from page 178.

Sometimes the proprietor hires miners by the day, but unless he can give careful attention to them, this is considered an objectionable plan; for when the miner works on shares, it is his interest to raise as much ore as possible, but when hired by the day it is no object to him to take out any at all; and it is not by any means unusual that when employed in this way they will carefully conceal a rich lead and work in unprofitable rock, until the proprietor abandons the diggings, and years perhaps have passed, when they will come back and make a new discovery there, and work it on the large share of four-fifths. The miners sometimes sell their "prospect," when it generally comes into the possession of the proprietors, who then receive the greatest share of four-fifths, or it is bought by other miners, who are then entitled to its original privileges.

The smelters are for the most part a distinct class from the miners. The are men of little capital, who expend it in establishing one or more furnaces in what they judge a suitable locality, both for convenience of water power and proximity of mines that promise a permanent supply of ore. Their business is to visit the mines, and every day bargain for so much ore, sometimes of one set of miners, sometimes of another. The ore is weighed out by the miners, the smelter sends his teams for it, and has it weighed again at the furnace. The price fluctuates with the price of lead, with the greater or less amount of competition either among the smelters or miners, and varies with the distance from Galena, the shipping port in Illinois. As the smelters generally have no capital to spare they must either sell their lead as they make it for what it will bring, or if they ship it themselves they are compelled to cease their operations, until they receive their returns, for in order to secure the good will of the miners they are obliged to pay for their mineral in cash, and it may be ten months before they receive the proceeds of their lead sent to the eastern market. On this account and from the unsteady character of the miners, who wander about as their fancy directs, there are few furnaces that keep in blast for a great length of time; they go for a week or a month or six months and stop as irregularly. No supply of *mineral* is ever bought up when it is low, though *lead* is often kept stacked up, waiting a higher price, and the furnaces out of blast for want of means to buy more ore.

Furnace Operations.—The furnaces are much improved within a few years past. The ore was formerly melted down on log heaps and a small portion of the metal thus extracted with a great waste of fuel. Now they are of approved forms and constructed with particular regard to the most economical method of smelting as to fuel and labor. The furnaces now employed are the *reverberatory* furnace with its modification the *cupola*, the *blast* furnace, and the *slag* furnace.

The *reverberatory* is much like the common reverberatory furnace for puddling iron and smelting other ores. The ore is supplied either through a hopper on the top, or through the holes in the sides, which also serve for admission to the pokers used to stir up the charge. The hearth is covered with old cinders beaten up, and it inclines back from the fire, so that the metal runs out from the end, under the chimney. In England, where these furnaces are extensively used, they are supplied with bituminous coal for fuel, but here they must make use of wood, and from the great consumption of it, this class of furnaces is only resorted to where wood is of little value, and water power is obtained. Another objection to them, besides the consumption of fuel, is that they do not smelt the ore clean, the slag being nearly as rich as the ore originally was; and it is therefore necessary to have a slag furnace connected with them. It is supposed from rude calculations, that an ore containing about 80 per cent. of metal will yield in a reverberatory about 65, and that the slag produced will contain from 30 to 40 per cent.

The following is an estimate of the working and produce of O'Neill's furnace about two miles south of Mineral Point. It is worked 18 hours out of the 24 by two shifts; each shift two hands. The ore used varies from 9,000 to 12,000 lbs., it requiring three, sometimes four charges of 3,000 lbs. each, according to the poorer or better quality of the ore. The consumption of fuel is about two cords a day, and the produce is from 75 to 83 pigs a day of 70 lbs. average weight. The two head smelters' wages $50 per month each; two back hands $25, and the board of them all beside. The average price of ore in 1841 was $15 per 1000 lbs.; lead was then worth at Galena three cents per pound.

Estimate of Expenses of Reverberatory Furnace.—

Wages per month as above, $150. Board four hands four weeks, $48.....	$198 00
Ore 10,500 lbs. daily for 26 days at $15 per thousand	4,095 00
Wood, 52 cords, at say $2.....	104 00
Hauling ore to furnace 273,000 lbs., at say 75 cents per thousand.....	204 75
Hauling lead to Galena 79 pigs daily at 20 cents per hundred.....	287 56
	$4,889 31
Worth of 2,054 pigs of lead at Galena...	4,313 40

But besides this produce is the value of the slag made, of the value of which it is impossible to make a correct estimate. The only way perhaps by which we may approximate it is as follows:—Supposing the ore to be originally worth 75 per ct. of lead, the 273,000 lbs. then contain 204,750 lbs. of metal, of which only 143,780 lbs. have been obtained in the 2,054 pigs; 60,970 lbs. are consequently missing—allow ten per cent. for loss in the furnace, (escaping in fumes of the oxide and sulphate of lead), and there remain 54,873 lbs. of lead, which must be in the slag. Taking average pieces of this slag, which consists of a mixture of pure lead, unaltered galena, sulphate of lead and earthy matters, grinding them thoroughly and submitting portions of the powder to analysis—fusing one portion with carbonate of soda and digesting another many days in dilute nitric acid, and then fusing the insoluble

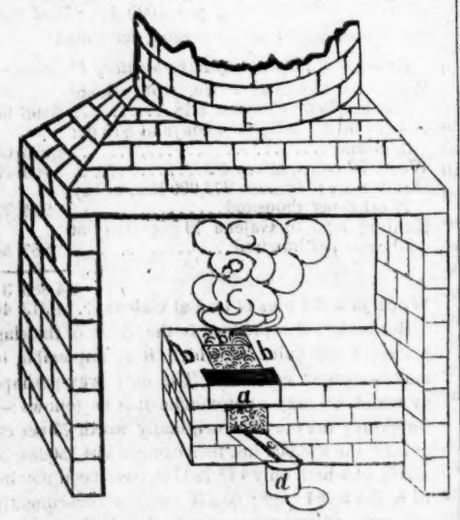
remainder with dry carbonate of soda, I obtained the following result, neglecting the sulphur and sulphuric acid:

Silica	15 per cent.
Sulphate of lead obtained by the action of fuming nitric acid or the sulphuret, precipitated by hydro sulphuric acid, gave lead	34·30 "
Per oxide of iron	24·53 "

The 54,873 lbs. of lead require therefore 160,000 lbs. of slag, when this contains 34·30 per cent. of lead. It seems a fair allowance that this should be worth one-third as much as the original ore, or $5 per 1000 lbs. = $820. Adding this sum to the value of the lead made, we have $4,313 40 + $820 = $5,113 40; from which, deducting the expenses, $4,889 31, the monthly profit is left of $244 09.

This estimate gives a small return for the am't of capital employed; but it must be observed, that it is made out under the most unfavorable circumstances in which a smelter can be placed; for without considering the highest wages that are paid, high board, and the heavy item of hauling ore, which may be much diminished with the distance, suppose ore to be raised on land owned by the smelter, discovered by others—he saves at once $829, and his monthly profits increase to $1,063. Suppose him to have made the discoveries with his own hired miners on his own land, and he then saves $3,276, making his profits for the month $3,520. But this calculation is made rather to show what *might* happen, than what has, or is likely to. It is one of the chances of the business, in which to some extent several smelters have been fortunate; but for the most part they would be glad now to obtain half the ore they require off their own lands, as the result of the discoveries of others.

The *blast* furnace is like those of the same name, in general use in England; though coke is the only fuel there supposed to be suitable for it, charcoal has here been found equally good and is in general use. The following sketch will give a general



a—Cast iron plate in front of the fire.
bb—Cast iron blocks forming the sides and back of the fire place.
c—Sloping hearth down which the lead runs into the pot, *d*.
d—Pot to catch the metal.

Across the whole front	11	feet	6	inches.
Depth	8	"	9	"
Height of furnace	2	"	8	"
Width of fire-place	1	"	7	"
Depth	1	"	9	"
Height above floor	1	"	4	"

idea of this furnace, and a minute description of its parts with working sections may be seen in Elie de Beaumont's "Voyage Metallurgique, etc."—The blast is raised by the simplest machinery—a crank on the end of the axle of the water wheel working either the common double bellows or a blowing cylinder; while another pair is often connected with the same wheel to blow a slag furnace or a copper furnace. Three hands are required to work this furnace; the head smelter, whose duties are not quite so arduous as those of the head smelter of a reverberatory, and whose pay is not so high; a "back hand," who assists the smelter by throwing in charcoal, wood and ore after he stirs the fire; and an assistant who prepares the materials. They work one shift, which ends when thirty pigs are made, and this requires from eight to ten hours. Then another set of hands come on and work another shift. Some smelters, however, employ but one set, still their day's work is over when the 30 pigs are run.

The process is this—a fire is made in the morning of billets of wood carefully arranged in the fire place, the blast is put on and charcoal added as the wood burns away; ore is then thrown on in small quantity together with a little lime. The ore has first been prepared by breaking it up either with a hammer or between a pair of cast iron rollers into pieces about the size of pigeons' eggs, and if mixed with much clay it must also have been washed in in a stream of water. It is allowed to remain a few moments on the surface of the fire, while a part of the sulphur is burnt out and carried off in part combined with the oxygen of the blast which comes in from behind through the fire. When the mass begins to smelt and becomes consolidated, the head smelter with a long iron bar pries up the whole body, working under the iron plate in front of the fire; he then finishes the operation by similar stirring above, and as he opens the mass the back hand throws some billets of wood under the whole against the back wall and the twere, and immediately adds more charcoal and more ore. This remains on the surface a few moments, and then the same operation is repeated, and so on. When the material clogs up and form lumps, they are beaten and broken with the shovel or pokers. The little slag, which is produced, is thrown up in the corner of the furnace, to be broken up and mixed with the ore, or reserved for the slag furnace. It is important neither for its quantity nor its richness, this method of smelting being found very effectual in reducing the ore. The metal soon fills the basin at the bottom of the fire place, and then runs out down the groove in the sloping hearth in front into a pot, when it is kept in a melted state by a fire of chips under the pot, and is ladled out into moulds whenever convenient. The whole inside of the fire place is lined with heavy blocks of cast iron made for the purpose, and generally brought from the furnaces up the Ohio river. Considerable skill is required to manage the fire, and it is only by long practice that one learns the true method of stirring up the charge, so that the metal shall run freely and steadily. The lime is supposed to act as a flux, but very little however is used, a handful or so being thrown on at each stirring. H.

The Albany Atlas states that Allen Campbell, Esq., for many years Chief Engineer of the Harlem railroad, has been invited to undertake the construction of a railroad to Chili. He will start early in April, by the Isthmus route.

On the Construction of Roads.

Continued from page 180.

WHAT ROADS OUGHT TO BE AS TO THEIR CROSS-SECTION.

The *cross-section* of a road is the view which it would present if cut through at right angles to its length, one of the portions being removed. It comprises the following subjects of investigation.

1. *The width of the road.*
2. *The shape of the road-bed.*
3. *Foot-paths, &c.*
4. *Ditches.*
5. *The side slopes of the cuttings and fillings.*

WIDTH.

The proper width for a road depends, of course, upon its importance, and the amount of travel upon it. Its minimum is about one rod, or 16½ feet, sufficient to enable two vehicles to pass each other with ease. For ordinary town roads a good width is from 20 to 25 feet. A width of 30 feet is fully sufficient for any road, except one which forms the approach to a very populous city.

Any unnecessary width (such as is often adopted in a spirit of public ostentation) is injurious, not only from its waste of land, but from its increase of the labor and cost of keeping the road in repair; each rod in width adding two acres per mile to the area covered by the road.

In the state of New York, by the revised statutes "All public roads, to be laid out by the commissioners of highways of any town, shall not be less than *three rods* wide."

This is to be the width between fences; and no more of it need be worked, or formed into a surface for travelling upon, than is deemed necessary.

The same laws declare, "It shall be the duty of the commissioners of highways to order the overseers of highways to open all roads to the width of *two rods at least*, which they shall judge to have been used as public highways for twenty years."

It is also ordered that "all private roads shall not be more than three rods wide."

Turnpike-roads are obliged by the statute to be "laid out not less than *four rods* wide," and "*twenty-two feet* of such width to be bedded with stone," &c. When a precipitous locality renders the full width impracticable, "*twenty-two feet*" is the minimum width permitted.

Where a road ascends a steep hill-side by zigzags, it should be wider on the curves connecting the straight portions. The width of the roadway may be increased about one-fourth, when the angle between the straight portions of the zigzags is from 120° to 90°; and the increase should be nearly one-half, when the angle is from 90° to 60°.*

The Roman military roads had their width established by the laws of the Twelve Tables, at 12 feet when straight, and sixteen when crooked; barely sufficient for the army, baggage, and military machines.

The French engineers make four different classes of roads.†

The first class comprises such as pass from the capital of one country to that of another. Their width is 66 feet, of which 22 in the middle are stoned or paved.

Those of the second class pass from the metropolis of a country to its other great cities. Their width is 52 feet, of which 20 in the middle are stoned.

Those of the third class connect large towns with each other and with first-class roads. Their width is 33 feet, with 16 feet in the middle stoned.

The fourth class contains common town roads. Their width is 26 feet, with the same middle causeway as the last.

In England, the prescribed width for turnpike roads at the approach to populous towns is 60 feet. The limits of by-roads are, for carriage roads, 20 feet; for horse roads, 8 feet; and for foot paths, 6½ feet.‡

Telford's Holyhead road, a model road for a hilly country, has the following width in the clear within the fences; 32 feet on flat ground; 28 feet

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* Mahan, p. 282.

† Gayffier, p. 90.

‡ Roads and Railroads, p. 73.

when there are side cuttings less than three feet deep and 22 feet along steep ground and precipices.

The United States National or Cumberland road has 80 feet in width cleared, but the road itself is only 30 feet.

The broken-stone road between Albany and Troy is 32 feet wide, besides two sidewalks of 8 feet each.

The "Third Avenue" of the city New York is 60 feet wide between the sidewalks, each of which occupies 20 feet; 26 feet of its middle are stoned.

Broadway, New York, is 80 feet wide between the houses, of which 19 feet on each side are occupied by the foot-pavements, leaving 42 feet for the carriage way.

When broken-stone roads are adopted, it is usual, for the sake of a saving in the first cost, to make only a certain width or "causeway," in the middle of the road, of the harder material, and to form the sides, or "wings," of the natural earth, (or of broken stone if the causeway be a pavement) which will be preferable in summer and for light vehicles and horsemen.† Sixteen feet for the middle and twelve for the sides is a common proportion.

If the stoned part be made narrower than just wide enough for two carriages to pass upon it, it should be made only wide enough for one; for any intermediate width will be a waste of all the surplus beyond what one requires.

If the road is to be made wider than two vehicles require, (which strictly is only 12 feet) it should be enlarged at once to 23 feet; for any intermediate width will cause unequal and excessive wear, and therefore be false economy; an unexpected conclusion, which results from an investigation of Gayffier, pages 184-8.

It would be preferable to place the harder material on the sides of the road, instead of on the centre; for the drivers of heavily-laden vehicles will generally keep them on the sides of the road, so that they can walk on the foot paths; and if this part be not of the hardest material, it will soon be cut up and rutted by the heavy wagons following each other on the same track.†

SHAPE OF THE ROAD-BED.

In forming the road bed, or travelled part of the road, the first and most important point, in a flat country, is to raise it above the level of the land through which it passes, so that it may be always perfectly free from water; a precaution which is one of the most essential requisites for keeping a road in good condition. Roads are often placed in a hollow-way, (or even a trench is dug, when better materials are to be added) and their surface is allowed to remain so low, that they form excellent gutters to drain the adjacent fields, at the expense of the comfort, labor, and time of all who travel them. Even the best ditches cannot always secure them from the land-springs, (which will sometimes pass under the ditches by fissures which form inverted siphons) and the only effectual means will be the raising of the surface by an embankment of two or three feet. The excavations for the ditches should invariably be thus applied.

The necessary *elevation* having been established, the *shape* of the road-bed, at right angles to its length or its "transverse profile," must be decided upon.

The road must not be flat, but must "crown," or be higher in its middle than at its sides, so as to permit the water of rains to rapidly run off into the side ditches. If originally flat, it is soon worn concave, and its middle becomes a pool, if it be on level ground; or a watercourse, if it be on an inclination. In the former case, the road becomes mud; in the latter, the smaller materials are washed away, and the larger stones left bare. Both these evils are of continual occurrence on our country roads, but may be easily prevented, by shaping the road according to the instructions to be presently given.

The usual, though improper, shape given to a road in order to make it crown, has been a convex curve, approaching a segment of a circle, or a flat semi-elipse. Though recommended by high authorities, it is very faulty, in consequence of its slope not being uniform, (the proportion between arcs and versed sines constantly changing) and giving too little inclination near the middle, and too much at the sides. From this peculiarity the following evils result:

1. The water stands on the middle of the road, and washes away its sides.

2. It is worn down very unequally: for all carriages, to avoid the danger of overturning on the steep sides, will take the middle of the road, which is the only part of it where they can stand at all upright; while the road ought, on the contrary, to be so formed as to induce vehicles to traverse it equally and indifferently in every part.

3. This excessive travel in the middle soon wears it into ruts and holes, so that more water will actually stand upon such an originally convex road than on one reasonably flat.

4. When carriages are forced to travel on the sides, they cause great additional wear to the road, from their constant tendency to slide down the sides, owing to the oblique angle at which the direction of gravity meets the surface.

5. As this sliding tendency is at right angles to the line of draught, the labor of the horses and the wear of the wheels are both greatly increased.

6. Whenever vehicles are obliged to cross the road, and mount the central ridge, they must overcome the same resistance of gravity, as when they are drawn up a longitudinal hill.

The best transverse profile for a road on level ground, is that formed by two inclined planes meeting in the centre of the road, and having their angle slightly rounded by a connecting curve.—The inclinations thus formed will be uniform, and the road will thus escape most of the evils incident to the curved profile.

The degree of inclination of these planes will depend on the surface of the road; being greatest where the road is rough, and lessening with its improvement in smoothness. It may also be somewhat less on a narrow road, as the water will have a less distance to pass over. Its maximum is limited by the inconvenience which an excessive transverse slope would cause to carriages. A proper medium for a road with a broken stone surface, is 1 in 24, or *half an inch to a foot*. Telford, in his Holyhead road, adopted 1 in 30, or 6 inches crown in a road of 30 feet; and McAdam 1 in 36, and even 1 in 60, or 3 inches in a thirty feet road. On a rough road the inclination may be increased to 1 in 20; and diminished on a paved road to 1 in 40, or 1 in 50.

Up to these limits the transverse slope should increase with the longitudinal slope of the road, which it should always exceed, in order to prevent the water running too far down the length of the road, and gullying it out; for the water of rains runs off from the middle of a road in the diagonal of a rectangle, the sides of which are proportioned to the steepness of the two slopes, longitudinal and transverse.

DITCHES.

The drainage of a road by suitable ditches is one of the most important elements in its condition. All attempts at improvement are useless till the water is thoroughly got rid of, and a bad road may often be transformed into a good one, by merely forming beside it deep ditches, sufficiently inclined to carry off immediately all the water which falls upon it. Even if water does not stand on the surface so as to form mud, if it filtrates from the higher land beside it, and from springs under it, and is not well drained off, it will weaken the substratum of the road so as to render it incapable of bearing heavy loads, and will be absorbed into the upper stratum by capillary attraction. If the road have a covering of broken stones, the water penetrating into it makes them wear away very rapidly by assisting the vibrating motion of their fragments, as lapidaries grind down the hardest stones by their own dust, with the aid of water.

The ditches should lead to the natural watercourses of the country; and should, if possible, have a minimum slope of one in a hundred and twenty-five, corresponding with the "minimum slope" of the road, though less will suffice if the bottom be truly cut and kept free from grass. They should generally be sunk to a depth of three feet below the surface of the road. Their size will be regulated by their situation, being greater where they intercept the water from side-hills rising above the road, and also where the country is humid. A width of one foot at bottom, with side slopes depending on the nature of the soil, will generally suffice. In wet soils the ditches should be so wide and deep, that the earth taken from them may be sufficient to raise the bed of the road between them three feet higher than the natural surface.

There should be a ditch on each side of the road on level ground, or in cuttings, and on the upper side of the road, or whereever it may be on a hill-side. The water from the side channels must be carried into these, and the contents of the ditches must pass under the road to the natural water-courses by means of *drains*, *culverts*, &c., as will be explained in chapter III. under the head of "Mechanical Structures."

WHAT ROADS OUGHT TO BE AS TO THEIR SURFACE.

QUALITIES DESIRABLE.

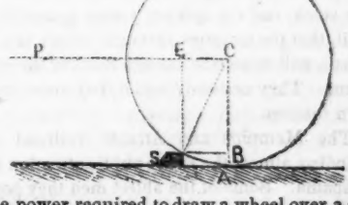
The surface of a road ought to be as *smooth* and as *hard* as possible, so as to reduce to their smallest possible degree the resistance of *elasticity*, *collision* and *friction*.

Smoothness is not only essential to comfort, but even more so to economy of labor, of carriage-wear, and of road-wear. Carriages passing over a smooth road are not only drawn more pleasantly, and with less exertion of animal strength, but also do much less damage to the road, than when it has hollows into which the wheels fall with the momentum of sledge-hammers, each blow deepening the hole and thus increasing the force of the next blow.

Hardness is that property of a surface by which it resists the impression of other bodies which impinge upon it. It is essential to the preservation of smoothness, except in the case of elastic surfaces.

RESISTANCES TO BE LESSENED.

Elasticity.—A road may be perfectly smooth, both before and after the vehicle has passed over it, but if it sink in the least under the passage of a wheel, this yielding presents before the wheel a minature hill up which the vehicle must be raised with all the loss of power demonstrated on page 32. If the depression were one inch, and the wheel four feet in diameter. an inclined plane of 1 in 7 would be formed, and one-seventh of the entire weight would need to be lifted up this inch. A road surface of caoutchouc, or India-rubber, of the most perfect smoothness, would therefore be the worst possible for traction, though very pleasant for passengers. The wheels would always be in depressions, and the horses would be alwasy pulling up hill. An elastic bottom for a road, such as a boggy substratum, would for this reason cause great waste of draught. A solid, unyielding foundation is therefore one of the first requisites for a perfect road.



The power required to draw a wheel over a stone or any obstacle, such as S in the figure, may be thus calculated. Let P represent the power sought, or that which would just balance the weight on the point of the stone, and the slightest increase of which would draw it over. This power acts in the direction CP with the leverage of BC or DE. Gravity, represented by W, resists in the direction CB with the leverage of BD. The equation of equilibrium will be $P \times CB = W \times BD$, whence

$$P = W\frac{BD}{CB} = W\frac{\sqrt{CD^2 - BC^2}}{CD - AB}.$$

Let the radius of the wheel = CD = 26 inches, and the height of the obstacle = AB = 4 inches. Let the weight W = 500 lbs., of which 200 lbs.

† A serious objection to this plan is, that the wheels which cross the road, and are alternately on the stone and on the earth, will deposite earth upon the stone surface, to the great deterioration of its advantages.

† Parnell, p. 129.

may be the weight of the wheel, and 300 lbs. the load on the axle. The formula then becomes

$$P = 500\,\frac{\sqrt{676-484}}{26-4} = 500\,\frac{13{\cdot}85}{22}$$

=314·3 lbs. The pressure of the point D is compounded of the weight and power, and equals

$$W\frac{CD}{CB} = 500 \times \frac{26}{22}$$

=591 lbs., and therefore acts with this great effect to destroy the road in its collision with the stone, in addition to its force in descending from it. For minute accuracy, the non-horizontal direction of the draught, and the thickness of the axle, should be taken into the account.

The power required is lessened by proper springs to vehicles, by enlarged wheels, and by making the line of draught ascending.

The resistance produced by the hollows between the stones of a pavement is of a different nature.—According to the investigations of M. Gerstner, the resistance arising from such a surface is directly proportional to the load, to the square of the velocity, and to the ratio of the width of the cavity to the radius of the wheel; and inversely proportional to the width of the paving stones.

To be continued.

HOGS KILLED IN THE WEST—1849-'50.

From the best information he could obtain, by personal inspection and otherwise, Mr. L. Cald. well has published in the Lafayette, Indiana, Courier of February 26th, a statement of the number of hogs slaughtered in the west during the past season. His aggregates are as follows:

Recapitulation.

Ohio	523,755
Kentucky	198,000
Indiana	428,575
Illinois	268,100
Mississippi river	252,900
Missouri river, es't	75,000
Cumberland river, es't	100,000
Other small points overlooked	25,000
Grand total	1,871,330

Alabama.

The Mobile Advertiser says: "The prospects for railroads in this State are brightening every day. Messrs. Connolly & Parham, agents for the Tennessee railroad, write from the upper portion of the State very cheerfully as to the prospects for the final completion of the enterprise. Meetings are being held in Talladega, Benton and Shelby counties, with a view of arousing the people to action, and to obtain subscriptions to the stock. A single planter in Talladega offers to take $20,000 worth of the stock, and the opinion seems generally to prevail, that the counties through which the road is to run will subscribe enough to carry the road thro' them. They certainly will if they understand their own interest.

The Memphis and Atlanta railroad is commanding almost the entire public attention in north Alabama. Some of the ablest men they possess, in that part of the state, have been canvassing every county on the projected line of the road, and with a success fully equal to their expectations.

Preparations are also in a state of forwardness for surveying and locating the Girard and Mobile railroad. This road, when completed, is destined to be the great thoroughfare between New Orleans and New York. Its prospects, too, appear good for a final completion. If the planters living on the line redeem their pledges—and who doubts it?—the road must go through.

This brings us to the Mobile and Ohio railroad. The stockholders of this gigantic undertaking have good and sufficient cause for congratulation, in view of their flattering position. Every step now made by the directors is upward and onward.—In addition to the large amount of stock subscribed by individuals, the city takes $300,000 worth; and if the State of Mississippi passes into laws the bills at last date before the Legislature, the position of this road will be as good as its best and most ardent friends could ask. Indeed, its prospects without the aid of the Mississippi Legislature may be put down as certain. The first hundred miles secured, and the Mississippi counties will take it up, and never drop it until it reaches Tennessee."

California Gold.

We copy from the Philadelphia American the following statistics, showing the receipts of California gold up to the present time. They are derived from the Treasurer of the U. S. Mint, in that city:

United States Mint, Philadelphia.

Total amount of California gold received up to the 28th February, '50 as per last report	$8,500,000
Receipts from the 1st to the 15th March, 1850	825,000
Amount of gold dust on hand, but not weighed, estimated at	150,000
Total	$9,475,000

Branch Mint, at New Orleans.

Total receipts up to 1st of January, 1850, as per last report	$668,079
Receipts during January, 1850	376,512
Do. February, 1850	561,538
Estimated receipts from the 1st to the 15th March, 1850	300,000
	$1,904,129

Recapitulation.

Receipts at U.S. Mint, Philadelphia.	$9,475,000
do. Branch Mint, New Orleans.	1,904,129
Grand total	$11,379,129

To which may be added, say $750,000 worth of gold dust still remaining in private hands. It would thus appear that the total amount of California gold received into this country from the first consignment, in 1848, up to the present time, exceeds the truly enormous sum of *twelve millions of dollars*;—but, enormous as it is, still much below the popular estimate.

The coinage at the Mint during the present quarter has been very heavy, as may have been inferred from the number of certificates paid. About $100,000 of double eagles have been coined and issued, and a still larger amount will be coined in the course of a few days.

THE MONEY KING.

Nathan Mayer Rothschild undoubtedly while living, was more courted than any King in the world. He was literally the King of Kings—for he held the sinews of war and peace in his own hands, and could bear up a despot when even his own people were against him. Mr. Rothschild resided in London—where by the mere power of money he was feted and caressed by the most refined aristocracy in the world. He was descended from an abhorred race—the Jews—who could not sit even in the House of Commons. Yet Princes and Dukes eagerly sougth to attend the banquets of the Hebrew—simply because he was rich.

Mr. Francis, in his recent history of the Bank of England, makes the following understandable remarks. The *personal* appearance of Rothschild was very repulsive, and thus he was worshipped for his mere wealth. Even his mental endowments were obscured by his overwhelming passion for money. He says:

"The language which Mr. Rothschild could use when his anger overbalanced his discretion, was a license allowed to his wealth; and he who, when placed in a position which almost compelled him to subscribe to a pressing charity, could exclaim, 'Here write a check—I have made one—fool of myself!' was courted and caressed by the clergy, was feted and followed by the poor, was treated as an equal by the first minister of the crown, and more than worshipped by those whose names stood foremost on the roll of a commercial aristocracy. His mode of dictating letters was characteristic of a mind entirely absorbed in money-making; and his ravings, when he found a bill unexpectedly protested, were translated into mercantile language before they were fit to meet a correspondent's eye."

LOOK ON THIS PICTURE AND ON THAT.

It is known to all the world that immense fluctuation has taken place in the price which the share market affixed to railway shares in 1845 compared with that which it affixes in 1850; but still it may not be a minute misspent to look at the following pictures, for the sake of the contrast:—

Prices quoted, Aug. 20, 1845,

London and North Western £100 paid	£225
Great Western, £80 paid	212
York and North Midland, £50 paid	108
Midland, £100 paid	172
Caledonia, £5 paid	10½
Oxford, Worcester, and Wolverhampton, £2½ paid	7½
Brighton, £50 paid	76

Prices quoted, Feb. 2, 1850

London and North Western, £100 paid	116
Great Western, £100 paid	68
York and North Midland, £50 paid	18½
Midland, £100 paid	44
Caledonia, £50 paid	12
Oxford, Worcester, and Wolverhampton, $50 paid	10
Brighton, £100 paid	83

The causes of this grevious fluctuation are also pretty well known. The principal are—mismanagement, Parliamentary oppression, shareholders' weakness and folly, and the public's want of confidence.—*Herapath's Journal.*

Mississippi.

The Vicksburg Sentinel gives a synopsis of the report of the commissioners of the Southern railroad. It says:

The following figures exhibit at a glance the disposition which has been made of the funds drawn from the treasury:

Received from 2 per cent. in State treasury		$201,180 40
Premium on U.S. Treasury notes		6,114 50
Total		$207,294 90
Deduct amount paid on account of Jackson and Brandon railroad and Bridge Co	$7,016 41	
Amount in hands of B. G. Weir	4,679 05	
Amount of cost of negroes, horses, carts, engines and cars, as per statement B	78,883 87	
		90,529 34
Leaving the sum of		$116,765 65

Which may be considered the amount actually expended in the construction of 13½ miles of road, (leaving a surplus of two miles of railroad iron) being at the rate of $8,649 30 per mile, including all expenditures for graduation, superstructure, bringing railroad iron, and the erection of the depots at Jackson and Brandon.

Iron Permanent Ways.

A series of experiments have been carried out by Mr. P. W. Barlow, C. E., from which he has been led to recommend the substitution of cast iron in place of wood in laying the superstructure of permanent way, as the only means of preventing those irregularities of surface which cause blows to be given by the engine that are not only annoying to passengers, but further, and more and more rapidly destructive to the way and to the carriages, as well as wasteful of the locomotive power and mechanism. The present practice he regards as temporary way much more than permanent. Mr. Barlow

finds it to be a mistake, that a partially soft elastic material such as wood is requisite to smooth and easy motion; the more rigid, and level, and polished the surface, the easier has he found the traction, and the better suited at least to railway transit.—Cast iron sleepers in two halves, with half chairs fitting the rail, and bolted together so as to avoid the use of the key, is that construction of superstructure to which experiment has led him to yield the preference, from the facility with which it is laid, from the perfect joint which it gives, and the security from breakage in the event of getting off the line. The point of the meeting of the plates is situated between the chairs, so that the bolts act under a spring which destroys all liability of loosening, to which he has found any tendency.—*Report to the Directors of the Southeastern Railway Company on Permanent Way; by P. W. Barlow, C. E.*

THE COAL TRADE FOR 1850.

The quantity sent by railroad this week is 15,347.14 tons. About 200 tons have been shipped by the canal.

The freight to Philadelphia by canal has opened at 60 cents. Nothing definite has transpired with regard to freight to New York. Boatmen want last year's prices, but shippers are offering less. So far no coal has been shipped to N. York by canal. The freight on coal from Richmond to New York, at present, is 80 cents per ton.

The Beaver Meadow company, and we believe all the companies on the Lehigh, have fixed their prices as follows, on board at Bristol; Lump, $3 75; Egg, $3 87½; and Stone, $4 per ton. These are fair and remunerative rates, and if adhered to, will add life and vigor to that portion of the Anthracite region. Some of our operators we regret to learn, have been offering coal at much lower rates, but without effecting sales. Dealers will not purchase at this season at any price, except to supply their immediate wants; and low offers, under such circumstances, only have a tendency to induce purchasers to hold off longer, and retard sales.

From inquiry we learn that in some sections of this region, nearly, if not quite, one half the miners and laborers have moved from the country, and unless wages advance to the rates paid elsewhere, they will not return—and if the wages *are* advanced here it is utterly impossible to sell coal as low as some parties are offering it. Such a policy cannot be condemned too strongly; and if they should be *caught* and suffer losses in consequence, they need not expect much sympathy in this region,—for we hold that it is absolutely and morally wrong for any person to sell coal, or any other article in advance, unproduced, and depend upon labor producing it, at a less rate than will afford a fair return to that labor which is to be engaged in its production, unless it is done under circumstances which we do not believe exist even now in the present depressed state of the trade.

One of our operators who has returned from a tour through the eastern markets, states that the supply of coal in market is considerably reduced from what it was at this period last year, and that many dealers are entirely out.—*Pottsville Journal.*

THE PACIFIC RAILROAD ENTERPRISE OUTDONE.

The London Times reviews the prospects of a scheme for constructing a railroad connecting the two stations of Calais in France, to Mooltan India. The Times says:

"In point of fact, the distance between England and India is of a very fabulous and artificial character. It used to be called 10,000, 12,000, or even 15,000 miles. The time consumed in traversing it has been varied from nine months to three. At the present time the journey from Bombay to Southampton is usually performed in 35 to 40 days, and there seems to be abundance of room for still further shortening the transit. For, after all, when we look at the plain facts of the case, India is only some few hundred miles further from us than the United States, though we have come to consider the latter country as lying at our doors, while we still regard the former as one of the utmost parts of the earth. From Spithead to New York it is 2820 miles; from Ostend to Hyderabad, on the Indus, it is only 3805. The estimated cost of this enterprise is put down at £34,050,000! The terminus of the railway is to be in Belochistan—a country, the Times tells its readers, 'which is bounded on the north by Affganistan, on the west and east by Persia and Scinde, and on the south by the Arabian Sea, and tenanted by an indefinable race, living under no describable government.'"

Maine.

The Railroad up the Kennebec.—The grading on the Kennebec and Portland railroad is to be prosecuted the coming season with all possible despatch. The cars are expected in Gardiner and perhaps Augusta, by the first of January, 1851.

The timber has been put up on the Androscoggin bridge at Topsham, the past winter, and there is nothing to prevent the completion of that bridge in two or three months. The bridge at Bowdoinham is nearly finished—what remains to be done can be accomplished in a very short time. The road is nearly all graded from Brunswick to Richmond village; and from Richmond to Augusta, about three hundred men are now employed in grading and stone work. In Gardiner, the steam shovel is fast working through the gravel hill on the south side of the village, and the embankment across the causeway, is fast filling up. In Hallowell, an alteration has been made in the grade thro' the village, which will save the company $30,000, and afford better satisfaction to the citizens of that town. The heavy embankment beyond Hallowell, is half finished, and the line half graded to Augusta.

Engine Drivers.

The fact that *five* explosions of locomotive engines have occurred within one year's time upon the railroads of this country, a majority of which have been attended with most fatal consequences, which should arouse the attention of the managers of railroad companies, and lead to the adoption of efficient measures to guard against such disasters. The first point to examine into is as to the character and qualifications of the men who have charge of engines. These men should be well educated in their calling, and kept constantly informed upon all questions affecting their business. The engine driver should be the best informed mechanic on the road. A large portion of the repairs on some roads arise from the want of proper skill and judgment on the part of the engine drivers. There is as much difference in the wear of an engine as there is in the wear of a horse. Those companies that furnish their engine drivers with suitable books and other means of information are amply repaid in the greater skill and more faithful performance of duty in those thus supplied with the means of knowledge. Every company could easily arrange this matter, and at once commence a most satisfactory system of training, among the various persons in their employ. Either require every man who works upon, or takes charge of a locomotive to furnish himself with the most valuable publication to be had touching upon the duties of his trade, or furnish the same to him at the expense of the company. One or the other of these things should be done. There is no danger but what such works would be read and studied. If not, then certainly the man who has so little love for his business or profession is unfit to take charge of a locomotive. Every day brings some valuable hints to the inquiring mind; suggesting remedies for existing defects, or pointing out new and more approved methods to accomplish certain results. These results are constantly appearing in various forms in the journals of the day. By close attention to these suggestions the faithful mechanic every day becomes more useful to his employer, is imbued with a higher moral, and becomes happier in the consciousness of his own advancement.

We say this as the conductors of an independent Journal, devoted to the railway interests and the practical sciences. There are many works and journals in the country which could be read with profit by all, and should be studied with care by all who have practical duties to perform upon railroads. Among this number our Journal may claim consideration, and the conviction of the importance of these general ideas, leads us to give increased attention to this particular department of railway economy. This number of the Journal furnishes a specimen of the character of certain articles we have furnished to us, from one fully competent to write on all these matters.

Georgia.

Milledgeville Railroad.—The *Recorder* says:—"At a meeting of the stockholders of the Milledgeville and Gordon railroad company, held on Saturday last, the following gentlemen were elected Directors, viz: George L. Deming, J. U. Horne, I. L. Harris, and Isaac Newell: the mayor of the city John H. Brown, Esq., the director on the part of the city council.

At a subsequent meeting of the board, George L. Deming, Esq., was elected president.

Maine.

Androscoggin Railroad.—The work of grading on this road is progressing rapidly. Some 30,000 yards of earth were removed last month, and we are assured that the same or a larger amount will be removed the present month. The directors are about to take measures to secure the means for furnishing the road, and it is hoped they will be able to put that portion of their road now under contract, into runing condition within a year.

New York.

Contractors.—Allotment of work on the New York and Erie Railroad;—

Reed, Tracy & Co.	24 miles
King, Lauman & Co.	12 "
Case. Barker, Gonder & Co	26 "
Wright, Mallery & Smith	12 "
Sherl, Lansing & Co	6 "
Sharp & Lankin	9 "
Britton, Smith & Co	16 "
Dimmick, Weed & Co.	7 "
Scott, Wells & Co.	7 "

The new locomotive, *Cleveland*, the first of the dozen contracted to be built at the Cuyahoga Steam Furnace, for the Cleveland, Columbus and Cincinnati railroad company, is on the track. It is large and powerful, and a most beautiful piece of work. The steamboat engines built at the Cuyahoga Works are unsurpassed by any, and good engineers express the opinion that this, the first locomotive turned out for the C. C. and C. road will perform admirably.—*Cleveland Herald.*

Georia.

☞ Nine new locomotives have lately been ordered at the North for the Central & South Western Railroads—*six* for the former and *three* for the latter roads. Of these *three* are from the workshop of HINKLEY & DRURY of Boston, *two* from Rogers, KETCHUM & GROSVERNER of Patterson N. J. *three* from BALDWIN of Philadelphia, and *one* from Messrs. NORRIS. The freight Engines weigh about 20 tons, passenger, 16 tons.

NOTICE TO SUBSCRIBERS.

Such of our Subscribers as wish for back numbers of our paper to complete their sets, or who may not have received the index of the past year, are requested to send for them without delay.

Table of Railroads

(No. 1.) STATISTICAL TABLE. 1849. NAMES OF ROADS.	Road. Total length	Length of sing. track.	Length of double T.	When laid.	Weight of rail per yard.	Equipments. No. shops & engine houses.	No. of engines	No. of pass. cars.	No. of other cars.	Miles Run. By pass. trains.	By freight trains.	No. of Passengers. Through.	Way
Albany and Schenectady	17	17	9	'44 '48 '49	58	5	6	60	77	50,871	31,135	249,810	.....
Albany and West Stockbridge	38½	38½	2½	'43	56	2	.....	.....	.....	53,126	135,970	101,911	40,476
Attica and Buffalo	31½	31½	.....	'47 '48 '49	62	5	6	7	67	99,875	.....	171,823	18,285
Auburn and Rochester	78	78	.....	'48	67	4	19	20	100	196,634	125,667	140,088	141,868
Auburn and Syracuse	26	26	2·9	'48	61	1	8	8	41	61,724	30,238	192,161	17,573
Buffalo and Niagara Falls	22	22	.....	'45 '49	57	3	.....	10	8	15,696	.....	82,191	19,479
Cayuga and Susquehanna	28	28	.....	'49	58	.....	2	4	62	12,480	7,280	4,056	.....
Chemung	17½	17½	.....	'49	58	.....	.....	.....	.....	.....	.....	.....	.....
Hudson and Berkshire	31½	31½	.....	'48 '49	56	2	3	4	40	57,140	.....	2,713	27,915
Hudson River	75	75	.....	'49	70	2	10	25	71	22,345	.....	79,869	.....
Lewiston	3½	3½	.....	'37	15	3	none.	6	3	7,792	.....	34,204	.....
Long Island	98	98	3	'44	48	6	15	19	120	112,024	80,994	168,443	.....
New York and Erie	294	204	9	.....	56 & 60	9	50	39	550	303,961	338,782	12,303	270,359
Northern	.....	30	.....	'49	60	1	5	2	119	.....	.....	.....	.....
Oswego and Syracuse	35	35	.....	'48	58	1	4	5	41	43,020	16,880	32,011	33,042
Rensselaer and Saratoga	25	25	.....	.....	58	2	4	10	21	48,749	7,808	85,662	24,171
Saratoga and Schenectady	22	22	.....	.....	.....	2	2	2	6	23,704	.....	17,273	85,735
Saratoga and Washington	39½	39½	.....	'48 '49	56	3	5	8	48	53,920	.....	54,127	35,516
Schenectady and Troy	20½	20½	.....	'42	56	3	4	6	43	58,209	12,629	51,962	3,674
Skaneateles and Jordan	5	5	.....	'45	10	none.	none.	2	3	8,970	6,760	4,610	2,200
Syracuse and Utica	53	53	53	'47 '48 '49	61 & 70	6	16	21	196	136,528	132,000	196,225	98,192
Tioga Coal, Iron, Mining and Manuf.	15	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tonawanda	43½	43½	.....	'47 '48 '49	61	4	7	12	91	104,182	52,206	144,800	50,141
Troy and Greenbush	6	6	.....	'45	56	1	3	3	10	49,126	9,464	205,465	.....
Utica and Schenectady	78	78	78	'47 '48 '49	65	6	18	.....	200	177,744	122,726	214,918	118,043

(No. 2.) COST OF RAILROADS IN 1849. NAMES.	Capital stock.	Amount called and paid in.	Whole cost of road.	Amounts Paid for Lands.	Grading.	Engineering	Bridging.	Masonry.	Iron, and for superstructure.
Albany and Schenectady	1,000,000	1,000,000 00	1,698,284 78	.....	.....	.....	.....	.....	.....
Albany and West Stockbridge	1,000,000	1,000,000 00	1,930,895 01	210,201 00	895,090 10	232,166 40	.....	.....	298,452 62
Attica and Buffalo	800,000	800,000 00	870,648 56	180,102 88	124,688 14	10,496 21	22,484 92	.....	400,612 07
Auburn and Rochester	.....	2,151,765 00	2,968,837 15	184,059 95	641,690 70	50,539 60	101,530 39	91,185 37	1,203,213 73
Auburn and Syracuse	.....	624,000 00	1,397,427 46	86,487 76	298,715 38	33,337 57	8,760 48	36,045 54	373,619 67
Buffalo and Niagara Falls	393,750	256,250 00	.....	133 80	106,600 49	4,806 16	14,609 03	.....	195,780 23
Cayuga and Susquehanna	.....	118,000 00	.....	.....	.....	.....	.....	.....	.....
Chemung	380,000	375,000 00	445,000 00	.....	.....	.....	.....	.....	.....
Hudson and Berkshire	450,000	375,000 00	819,631 45	64,261 31	660,593 97	.....	.....	.....	.....
Hudson River	3,281,500	3,157,175 00	5,003,675 39	459,294 62	2,892,681 24	144,855 59	.....	.....	811,627 48
Lewiston	50,000	27,000 00	30,052 19	1,068 79	5,376 26	817 46	.....	.....	15,467 99
Long Island	.....	1,781,494 46	2,091,341 59	.....	.....	.....	.....	.....	.....
New York and Erie	10,500,000	5,778,891 00	16,430,868 63	557,096 60	5,883,242 47	307,736 31	.....	.....	1,734,373 50
Northern	2,000,000	1,329,517 59	1,863,291 34	55,534 06	927,981 43	91,477 98	51,514 88	.....	477,611 17
Oswego and Syracuse	350,000	350,000 00	548,353 08	38,846 53	187,274 94	14,071 29	9,179 12	.....	243,797 22
Rensselaer and Saratoga	300,000	300,000 00	674,798 97	.....	.....	.....	.....	.....	.....
Saratoga and Schenectady	.....	.....	386,304 25	.....	.....	.....	.....	.....	.....
Saratoga and Washington	850,000	781,300 00	1,102,505 65	85,444 40	531,650 57	23,153 61	.....	.....	279,779 47
Schenectady and Troy	650,000	650,000 00	672,910 25	84,750 58	221,296 85	29,582 23	22,440 69	76,033 19	135,049 47
Skaneateles and Jordan	25,000	25,000 00	28,361 60	.....	.....	.....	.....	.....	.....
Syracuse and Utica	2,000,000	1,802,100 00	2,363,043 55	141,894 78	369,829 50	38,747 96	109,180 85	.....	1,103,466 78
Tioga Coal, Iron, Mining and Manuf.	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tonawanda	1,000,000	950,000 00	974,865 66	.....	.....	.....	.....	.....	.....
Troy and Greenbush	274,400	274,400 00	275,425 93	.....	.....	.....	.....	.....	.....
Utica and Schenectady	3,560,000	3,494,010 00	4,006,428 02	389,386 39	671,927 82	69,806 33	82,565 35	162,129 16	1,797,470 00
Watertown and Rome	1.500,000	237.829 46	221,961 39	17.630 93	98,729 51	14,752 18	6.370 80	28,841 89	50,000 00

(No. 3.) EARNINGS AND EXPENSES DURING 1849. NAMES.	Amounts Received from Passengers.	Freight.	Mails.	Interest.	Other sources.	Amounts Expended for Repairs of roadway.	Repairs of buildings	Repairs of Passenger cars.	Repairs of freight and other cars.	Fuel.
Albany and Schenectady	115,717 59	62,550 02	2,650 00	.....	3,111 44	6,222 28	.....	.....	.....	16,759 03
Albany and West Stockbridge	.....	.....	.....	.....	.....	18,183 89	6,420 58	.....	.....	.....
Attica and Buffalo	144,519 23	28,523 60	5,107 06	1,284 12	8,662 95	2,021 34	1,118 77	.....	*8,349 97	7,500 55
Auburn and Rochester	408,424 90	111,579 72	5,670 00	.....	2,189 21	21,637 72	1,718 43	27,634 82	.....	44,954 98
Auburn and Syracuse	150,163 64	37,392 98	1,813 73	.....	4,387 49	17,550 18	2,336 03	7,981 93	.....	17,814 52
Buffalo and Niagara Falls	47,766 65	3,813 57	900 00	.....	.....	2,111 54	61 54	.....	.....	2,576 84
Cayuga and Susquehanna	4,823 39	7,818 80	.....	.....	.....	.....	.....	.....	.....	.....
Chemung	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hudson and Berkshire	13,111 72	24,315 57	.....	.....	400 00	6,376 02	229 06	707 32	.....	5,461 81
Hudson River	31,036 74	.....	.....	.....	46,301 63	.....	.....	1,286 46	.....	12,765 30
Lewiston	7,924 86	667 75	216 67	.....	128 50	554 26	.....	288 81	.....	.....
Long Island	108,823 78	44,881 30	7,610 00	.....	.....	.....	.....	.....	.....	.....
New York and Erie	363,209 96	425,078 12	21,489 42	.....	366 12	61,640 44	.....	.....	.....	60,559 91
Oswego and Syracuse	48,877 50	6,475 99	528 02	.....	1,638 12	13,419 40	.....	.....	.....	7,028 38
Rensselaer and Saratoga	81,790 92	19,453 52	870 33	.....	19,093 87	8,282 23	129 82	.....	.....	5,496 65
Saratoga and Schenectady	24,361 29	10,140 22	495 47	.....	1,565 96	9,679 59	392 73	.....	.....	1,545 76
Saratoga and Washington	75,592 54	10,426 72	2,500 00	.....	930 13	.....	.....	.....	.....	8,657 65
Schenectady and Troy	26,693 02	19,610 60	684 50	.....	656 32	10,549 40	.....	.....	.....	7,490 93
Skaneateles and Jordan	1,805 52	1,703 31	130 00	.....	590 60	.....	.....	.....	.....	.....
Syracuse and Utica	326,525 67	97,858 40	5,414 65	.....	35,004 24	26,395 81	.....	11,376 17	9,933 37	22,656 71
Tonawanda	189,284 14	60,014 63	7,295 92	2,680 34	91,256 02	11,407 71	101 89	*2,118 56	.....	12,664 66
Troy and Greenbush	30,990 15	25,107 52	582 48	.....	527 64	4,224 75	378 64	.....	.....	5,115 69
Utica and Schenectady	533,953 28	251,033 77	7,969 64	15,676 46	16,638 40	41,110 31	14,903 90	20,400 16	24,975 20	28,193 75

* Cars of all kinds.

In the State of New York.

Rate of Fare Per Mile.				Amount of Freight in Tons.								Av. Speed p.h.		Av. No. men employed.	No. Persons		REMARKS.
Class 1. cts.	2. cts.	3. cts.	4. cts.	Total.	Forest.	Animal.	Vegetable.	Other agriculture	Manufactures.	Merchandise.	Other.	Pass. trains.	Frgh't trains.		Kil'd.	Inj'd.	
3	1·8	....	....	51,261	1,679	15,409	6,924	1,101	3,962	16,230	5,956	25	15	130	none.	none.	
3	2·4	....	....	155,415	6,356	21,214	84,252	948	11,537	3,659	27,449	22	15	.....	none.	none.	Road leased to W. Railroad Mass.
3	1·8	1·5	....	14,458	413	4,721	2.103	685	742	4,329	1,465	26	16	80	2	none.	
3½	2	1·5	....	36,234	.....	.....	.....	.....	.....	.....	.....	25	15	279	11	1	
3·07	1·84	1·6	1·53	5,689	198	888	1,460	75	1,040	856	1,172	26	12	152	5	.....	
2·4	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	20	.....	28	none.	none.	
3·5	....	....	....	6,690	4,179	.....	.....	257	857	400	977	.....	.....	.....	2	none.	
.....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Leased to New York & Erie.
.....	....	....	....	21,828	1,718	1,236	4,507	462	6,160	.....	7,746	20	12	75	2	none.	
1½	....	....	....	none.	.....	.....	.....	.....	.....	.....	.....	30	.....	181	2	2	
7½	6½	....	....	1,335	.....	.....	.....	.....	.....	.....	.....	.....	.....	15	none.	1	
2	....	....	....	Irreg'r.	.....	.....	.....	.....	.....	.....	.....	.....	.....	160	1	1	
2	1½	....	....	109,402	10,468	27,480	9,377	670	12,128	32,203	17,076	22	12	.....	10	13	
.....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	.....	Not opened.
2·4-5	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	19	10	75	1	1	
3	....	....	....	12,376	814	1,298	2,178	197	2,143	3,602	2,144	24	15	56	1	11	
3½	....	....	....	4,988	595	209	1,073	36	484	1,190	1,401	15	.....	30	none.	none.	
3	2	....	....	7,452	330	1,111	922	88	636	2,751	1,615	22	.....	.....	3	.....	
2½	1½	....	....	18,382	616	4,353	7,431	365	1,039	2,322	2,256	25	15	46	none.	none.	
6	....	....	....	2,450	453	132	138	5	665	248	809	.....	.....	5	.....	.....	
2·83	1·88	1·51	....	.....	.....	.....	.....	.....	.....	.....	.....	25	12	339	12	2	
.....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Road leased.
3	1⅔	1⅓	....	20,661	998	1,538	11,563	294	451	3,645	2,172	22	15	238	2	1	
2½	....	....	....	37,971	2,696	7,994	12,436	762	4,671	885	8,527	.....	.....	49	1	none.	
2·88	1·88	1·6	1.4	26 677	1,149	4,540	4,341	830	4,754	4,455	6,608	28	15	450	3	1	

Buildings.	Amounts Paid for Engines.	Pass. cars.	Freight & other cars.	Other items.	Indebtedness Bonds.	Floating debt.	Amount due the corporation.	Amount paid for construct'n in 1849.	REMARKS.
.....	.....	.....	.....	.....	552,000 00	.....	.....	93,088 08	
294,982 90	.....	.....	.....	.....	.....	930,895 01	.....	6,193 34	Leased to "West." of Mass.
24,271 94	60,152 00	*47,840 40	.....	.....	.....	67,176 43	33,313 07	49,334 69	
105,250 26	144,776 00	24,800 00	60,000 00	361,791 15	638,000 00	60,000 00	.....	125,000 00	
22,633 67	57,081 03	16,894 40	28,398 83	235,453 13	375,000 00	30,000 00	13,318 91	697 79	
6,550 00	34,320 69	*18,240 71	.....	.....	46,670 00	25,886 15	.....	154,513 84	
.....	.....	.....	.....	.....	.....	253,000 00	3,374 71	68,011 42	
.....	.....	.....	.....	.....	70,000 00	5,000 00	5,000 00	.....	Leased to New York & Erie.
20,734 23	35,538 29	*38,503 65	.....	.....	375,000 00	41,549 92	3,000 00	23,154 25	
220,833 98	15,294 47	*71,648 76	.....	387,439 25	1,867,625 00	88,101 12	79,150 00	.....	
750 00	horses, 1,535 00	4,886 40	.....	250 31	.....	308 44	100 00	.....	
.....	70,500 00	.....	.....	2,120,841 59	447,563 96	35,426 05	8,275 15	1,801 78	
270,273 89	402,322 88	98,011 97	287,238 13	.....	†5,839,918 90	2,481,647 41	23,507 12	4,813,142 27	†$3,000,000 state loan, not included.
21,895 30	29,635 78	*47,000 60	.....	160,600 14	388,100 00	313,957 03	118,094 96	.....	Not opened.
7,978 73	18,000 00	10,596 50	18,971 88	3,636 82	182,000 00	22,906 07	1,500 00	.....	
.....	.....	.....	.....	.....	185,500 00	.....	.....	22,888 04	
.....	.....	.....	.....	.....	.....	65,365 00	.....	55,267 88	
36,457 39	29,000 00	*21,043 75	.....	95,976 46	334,500 00	35,000 00	.....	.....	
9,416 26	30,925 16	*35,924 27	.....	27,491 55	.....	53,519 81	584 00	13,241 41	
.....	.....	.....	.....	.....	.....	.....	.....	.....	
104,536 65	113,189 71	*125,570 57	.....	126,626 75	80,000 00	41,300 80	15,574 00	388,798 10	
.....	.....	.....	.....	.....	.....	.....	.....	.....	Road leased.
.....	.....	.....	.....	.....	152,000 00	51,153 48	69,404 67	176,102 57	
.....	.....	.....	.....	.....	.....	10,813 42	4,413 76	.....	
227,662 00	241,668 27	*301,292 70	.....	62,500 00	102,500 00	.....	95,553 68	350,777 16	
.....	.....	.....	.....	5,636 08	.....	.....	.....	.....	Not opened.

Amounts Expended for Taxes.	Oil.	Salaries of officers and agents.	Conductors and brakemen.	Engine and firemen.	Interest.	Other expenses.	State tolls.	Amount charged for depreciation.	Dividends. No.	Amount.	REMARKS.
4,094 38	.....	.....	.....	3,820 82	35,909 98	35,597 04	8,335 60	.....	2	70,000 00	
5,985 79	.....	.....	.....	.....	.....	4,308 03	.....	.....	.....	.....	Leased to "West." of Mass.
5,298 63	3,588 57	14,442 61	3,069 94	6,104 33	21,008 26	15,983 76	26,121 99	22,105 40	2	53,585 00	
8,650 36	10,412 86	21,603 06	10,200 00	10,938 25	3,922 38	9,028 09	8,934 38	.....	2	188,536 00	
2,674 68	2,747 78	7,623 59	5,336 24	6,775 99	26,152 40	23,017 29	8,898 88	.....	2	45,000 00	
1,160 62	719 38	2,465 06	840 00	958 13	.....	.....	.....	.....	1	7,997 33	
.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1,800 00	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Leased to New York & Erie.
454 73	.....	6,377 64	1,222 49	1,778 80	20,500 00	2,706 88	.....	.....	.....	.....	
.....	662 64	.....	6,318 92	1,618 91	.....	2,207 76	.....	.....	.....	.....	
.....	.....	.....	.....	.....	.....	5,227 74	.....	.....	1	$3 75 per sh.	
.....	.....	.....	.....	.....	26,172 45	148,458 77	.....	.....	.....	.....	
.....	27,654 33	39,307 78	40,091 53	34,351 61	.....	71,910 96	.....	.....	2	291,595 83	
3,414 03	632 68	2,723 10	1,996 55	2,794 04	10,356 32	3,191 73	.....	.....	.....	.....	
1,203 26	1,917 31	.....	.....	.....	11,235 00	48,041 04	.....	.....	2	30,000 00	
.....	585 70	.....	.....	.....	.....	12,906 94	.....	.....	.....	.....	
3,890 07	2,907 88	.....	1,637 28	2,578 90	.....	22,236 50	2,568 54	.....	.....	.....	
1,726 50	1,451 55	5,043 78	1,560 00	3,296 00	807 09	12,863 96	3,032 28	.....	.....	.....	
.....	.....	.....	.....	.....	.....	3,229 48	.....	13,361 60	.....	1,000 00	
11,627 24	6,653 80	8,716 36	13,720 38	12,815 66	5,705 00	15,219 40	24,639 36	30,000 00	2	9 per ct.	
3,635 60	2,933 93	4,890 00	4,170 77	5,358 00	9,612 81	27,418 50	2,224 09	.....	2	7,400 00	
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22.522 42	5,237 74	4,766 64	9,616 93	12,732 71	.....	108,703 26	49,221 57	.....	2	333,015 50	

* Cars of all kinds.

AMERICAN RAILROAD JOURNAL.

Saturday, March 30, 1850.

F. M. Ray's India Rubber Spring.

New York and Erie Railroad Shops.
Piermont, March 26, 1850.

This will certify that from practical experience in the use of Fowler M. Ray's India rubber Car Springs, I believe them to be far superior to any others now in use.

I have never known them to be affected by any change of temperature, as other Rubber Springs have been affected on this road.

I am at the present time repairing a Passenger Car that Mr. Ray and myself mounted with his springs about two years and eight months since.

The springs are at the present time as perfect, to all appearances, as when first applied to the car.

Respectfully yours,
HORACE B. GARDNER,
Foreman of the Car Shops.

—

Old Colony Railroad Office,
Boston, March 6, 1850.

EDWARD CRANE, Esq.,
President New England Car Co.,

Dear Sir: In compliance with your request I would state that the Old Colony Railroad Comp'y have had in use upon their road, India-rubber Springs furnished by your company, for more than eighteen months past, during which time they have been extensively used under Passenger and Freight Cars, Locomotive Tenders, and for Drawer and Buffing Springs, with the most perfect success. The elasticity and consistency of the Rubber has never been unfavorably affected by either extremes of heat or cold—and from the experience which we have had in the use of Rubber Springs, I think them well adapted for railroad purposes—and therefore we have for some months past used Rubber almost exclusively, in all places where springs are required.

Respectfully yours, etc.,
JAS. H. MOORE,
Supt. O. C. Road.

—

February 25, 1850.

From practical observation of the use of the India-rubber Car Springs, manufactured and sold by your company, we are entirely satisfied in their application, and do not hesitate to recommend them as elastic, durable, requiring no repairs for years, and retaining their consistency during all extremes of weather. We have applied them for the past two years, and consider them superior for all railroad purposes.

Yours truly,
OSGOOD BRADLEY, Car Builder, Worcester.
T. & C. WASSON, do. Springfield.
DEAN, PACKARD & MILLS, do. do.
DAVENPORT & BRIDGES, do. Cambridgeport.

—

Fall River, February 2, 1850.

In answer to yours of the 20th ult. I would say that this company has for some 10 or 12 months past been using "Ray's India-rubber Springs." We have applied them to both passenger and freight cars with uniform success. They have invariably preserved their elasticity and consistency through all the extremes of weather; and we are now applying them whenever the steel spring fails. I am well satisfied that they are particularly adapted for railroad purposes.

Very respectfully yours,
GEO. HAVEN,
Supt. Fall River Railroad.

—

Office of the Boston and Lowell Railroad,
Boston, March 8, 1850.

EDWARD CRANE, Esq.,
Agent NewEngland Car Co.

Dear Sir—In reply to your note, it gives me pleasure to state, that the results of using your India-rubber Springs on this road have been altogether favorable.

They retain, so far as has been observed on this road, their elasticity in any temperature; and are equally unaffected by the oil, with which they are necessarily brought into contact, and which I at first apprehended might have an injurious effect.

Though not in my opinion so easy as the "Air-spring" in its perfect state, they are much more easily kept in order, (indeed they require nothing in the way of repairs,) and they last much longer, so that I am now substituting them for "air-springs," wherever these have been used under our cars.

Respectfully yours,
WALDO HIGGINSON,
Agent Boston and Lowell Railroad.

Office New Jersey Railroad Co.,
Jersey City, March 8, 1850.

FOWLER M. RAY, Esq.,

Dear Sir: In answer to your enquiries respecting the operation of the Vulcanised Rubber Springs, purchased by our company from you some two years since, I reply that they are superior to any spring in use, (that I have either seen or heard of).

The improved form of your spring, consisting of a solid piece of vulcanised rubber with bands on the outside, is far superior to your first form, consisting of disks of rubber with metallic plates interposed.

The last named form was tried, if you recollect, at a much earlier period; and then was replaced by your last form.

I have no hesitation in saying that your springs have given entire satisfaction, and most cheerfully recommend them to railroad companies throughout the country for the following reasons:

1st. The cost is 30 per cent. less.

2d. Saving of weight on each car of 8 wheels from 700 to 800 lbs.

3d. Less care and attention is required, as they are not liable to get out of repair.

4th. A great saving is secured in the wear and tear of the cars and rails from their great elasticity.

5th. The freedom from noise.

6th. There is greater safety in case of accident, as they cannot be broken.

7th. The comfort of passengers is enhanced sufficiently to pay the expense, waiving all the other reasons that I have given.

Should this fail to satisfy any person enquiring, you are at liberty to refer to me, No. 150 Washington St., Jersey City. Yours respectfully,
T. L. SMITH, Supt.

—

New York, March 11, 1850.

I have used the Patent India-rubber Spring purchased of Mr. Ray, upon the cars of the New York and New Haven Railroad, and have found them efficient and economical; and when applied to the axles and draw springs, believe them to be quite equal to any in use. I have found a combination of these springs with a steel spring under the transom beam a very satisfactory arrangement, and am now using this plan in all new cars. Yours respectfully,
ROBERT SCHUYLER.

Passenger Car Linings.

THE Advertiser continues to make to order the Enamelled Car Linings which have been so highly approved the last three years, and are now exclusively used by all the Northern Railroads. No pains are spared to get out new styles, and adapt them to the tastes of every consumer.

Orders addressed to CHARLES STODDER, No. 75 Kilby street, Boston, will have prompt attention.
March 23, 1850. 2m

To Contractors.

SEALED PROPOSALS will be received at the Office of the Nashville and Chattanooga Railroad Company in Chattanooga until the 20th day of May next, for the graduation and masonry of the Chattanooga Division of said Road—embracing a distance of 27½ miles.

The graduation will be heavy for about 15 miles, (in crossing Rackoon Mountain, and passing around Lookout Mountain bluffs), the balance, average work, The masonry will consist chiefly of cut stone Piers for Tennessee River Bridge, (about 4 000 Perches,) Piers for running Water Bridge, (about 2,000 Perches), and Pier for Lookout Creek Bridge, about 500 Perches.

Sealed proposals will also be received at the same time and place, for the graduation of 10 miles of the Eastern end of the Winchester Division—embracing some heavy work. Also the masonry of Elk River and Widow's Creek Bridges.

Plans and Profiles of the Work will be exhibited, specifications furnished, and all other desired information given, on application to Mr. James A. Corry, the Engineer in charge of the work, at the Company's Office in Chattanooga, from the 10th of May until the day of letting.

Before making bids the line should be throughly examined. The depths of the Cuts and Embankments can be ascertained from the centre stakes. The work to be commenced immediately after the letting. And that portion from Chattanooga to Lookout Bluffs to be completed by the 1st of December next. The other sections to be finished successively on toward the West end of the Division—the last by the 1st of October, 1851.

The most satisfactory testimonials will be required. The payments will be made in cash—reserving the usual 20 per cent. until the completion of the work.

By order of the Board.
JAMES H. GRANT, Chief Eng.
Nashville, Tenn., March 14, 1850.

TO CONTRACTORS.

NOTICE is hereby given, that from 30 to 60 miles of the Orange and Alexandria Railroad will be ready for examination between 1st and 15th of April next. The road passes through a very healthy and fertile region, and embraces an amount of work every way worthy of the attention of able and experienced men.

The Company prefers to let the whole work of construction in contracts of not less than 30 miles, and for that purpose parties wishing further information are invited to call at the office in Alexandria.

The bids will be made on a basis of payments in cash to the amount of 85 per cent, and the remaining 15 per cent in the stock of the company. They must be sent to this office not later than the 16th day of April next, to be submitted to the meeting of the Board of Directors to be held on the 18th of the same. By order of the Board. T. C. ATKINSON,
Chief Engineer.

For the information of parties at a distance, it is well to state that the *Orange and Alexandria Railroad* is about 90 miles long, and extends from Alexandria through Fairfax, Prince William, Fauquier, Culpeper and Orange counties to Gordonsville, a point on the completed portion of the *Virginia Central Railroad*, formerly called the Louisa railroad.

An inspection of the map will show that its connections promise to make it as valuable a thoroughfare as any in the Union.

To Contractors.

THE Election of Directors of the Queenston Suspension Bridge Company having taken place, the Company are now prepared to receive Plans for the Bridge and Tenders for its erection. All communications to be directed, GILBERT McMICKEN,
1m11* Queenston, Canada W.

Railroad Iron.

3,000 TONS C. L. MAKE 63½ lbs. per yard, now landing and to arrive.

Also contracts made for future delivery of above superior make English Iron.

300 Tons Banks Best Iron, Round, Square and Flat.
200 " English Bar " " " "
10 " 9-16 Square Iron for Railroad Spikes.

For sale in lots to suit purchasers by
DAVID W. WETMORE.
New York, March 26, 1850. 3m

Pennsylvania Railroad.

PROPOSALS will be received at Blairsville, Indiana county, until the 18th of April next, for grading the Western Division of the Pennsylvania Railroad.

The work to be contracted for, embraces three short Tunnels, a number of Stone Bridges and Culverts, and some very heavy excavations and embankments.

For further information apply to EDWARD MILLER, Esq., Associate Engineer, at Blairsville.
J. EDGAR THOMSON, Chief Eng.
Engineers' Department, Pennsylvania R.R.,
Philadelphia, March 23, 1850.

To Miners and Mining Companies.

THE undersigned would respectfully call the attention of those persons engaged in mineral operations on Lake Superior to the following list of articles which will be sold on accommodating terms, viz:

600 bbls. Corn fed No. 1 Mess Pork.
500 " Stall fed Mess Beef.
25,000 lbs. "Sugar cured canvassed" Hams.
2,200 " Dried Beef.
60,000 " "Kiln dried" Corn Meal,
500 bush. White "Field" Beans.
300 " Canada" Peas.
500 " Dried Apples.
100 bbls. and half bbls. "cucumber" Pickles.
50 " Sour Krout.
30 bush. Onions.
1,000 Beefs' Tongues Smoked and in Pickle.
10,000 lbs. "Mould" Candles.
10,000 " "Hard" Soap.

Also, a full and large supply of all articles that may be required by Mining Companies and those connected with them. C. A. TROWBRIDGE,
127 Jefferson Avenue, Detroit, Michigan.

Gas Fixtures.

FIXTURES for Burning Gas for Lighting Public Buildings, Private Dwellings, Stores and Factories, manufactured by the subscriber in great variety. Orders by Mail, or left at the Factory on Causeway street, will be promptly attended to.
HENRY N. HOOPER & CO.
Boston, March 23, 1850. 6m13

Pacific Railroad.

Philadelphia Convention.

On the first proximo, the great convention to promote the construction of a railroad to the Pacific will be held in Philadelphia, by adjournment of the convention held in St. Louis in October last,

We look upon the convention as likely to give a more definite and organised form to the public opinion which favors this work, than either of its predecessors held at St. Louis or Memphis. To be sure, we have but little information not known at the time these conventions were held; but until the question shall have been settled by actual survey, each section of the country interested in the road will assume the superiority of its favorite route; and this very unceriainty, may serve the useful purpose of concentrating public opinion upon the route which, abstractly shall meet the convenience of the greatest number ot people. Should surveys therefore, leave the question of superiority ot route nearly balanced, nothing will remain to be done, but to enact the will of the majority already expressed.

The object of meeting at Philadelphia, was to a certain extent sectional. That city is soon to be connected with St. Louis, by a line of railroad so remarkable for its directness, as to render it a shorter route from St. Louis both to New York and Baltimore than by the roads which these latter cities are building for the purpose of forming similar connections. Philadelphia regards herself as the appropriate eastern terminus, of the Pacific railway. Her interests and those of St. Louis are believed to be identical, and the interests of these two important cities are sustained by the united and potent influence of the various companies which are busily engaged in constructing what they believe to be the first great link in the chain of the Pacific railroad, from the Atlantic to the Mississippi. We may therefore expect at Philabelphta, an emphatic declaration in favor of making St. Louis one of the points in this great work.

It is certainly remarkable, that the lines of railway by which the four great Atlantic cities, Boston, New York, Philadelphia, and Baltimore, rivals of each other, are seeking to connect themselves with St. Louis, all make a common point in Western Ohio, and from thence pursue an identical route to St. Louis. Philadelphia therefore has no greater interest in the St. Louis route, as it is termed, of the Pacific railroad, than has Boston New York, or Baltimore. The position of Philadelphia gives her the advantage of the shortest route. Indeed it is probable that this route will be the shortest by which merchants from either of the other cities, named, can reach the Mississippi, in preference to the routes from their respective cities.

Philadelphia and those engaged in the construction of the great central railroad, from that city, to St. Louis, have made the most of this fact, and have created an impression that she peculiarly was interested in the St. Louis route, while in fact she is no more so than her neighbors: all stand on the same footing in this respect.

It is for the interest of all the eastern States, lying north of Virginia, that the road to the Pacific should not run south of St. Louis, while this is the extreme southern limit of convenience to this section. It is also equally true, that the same section has a similar interest in a route further north. Should such a route, eventually, be found superior to the one by St. Louis, all the routes from the different parts of this section, making as we said before, a common point in Ohio, are interested in the same route west of this point. The interests of Philadelbhia are, therefore, the interests of the whole north and east, and the voice of this convention, will be the voice of this section when it shall be called upon to act.

Where may be, eventually, the main trunk line of the Pacific railroad, through the fertile portion of the Mississippi valley until, it reaches the section where the natural features of the country will allow but one route is not a question which we are now called upon to consider. The valley of the Mississippi is to be covered with a net work of railways, and amore northern route than St. Louis, crossing the Mississippi and Missouri rivers, at points where they can be bridged without injury to their navigation may in the end be adopted. This can be done at Rock Island on the Mississippi, and Council Bluff on the Missouri. We must expect that commerce will seek for itself, the most direct and easy channel of communication, with the same certainty that water follows the lowest depression.

But in the building of railroads the settlement of the country will to a certain extent overide the mere question of superiority of route, as inhabitants along the proposed line, may be regarded as an almost essential condition of its construction.

In the state of Missouri only, is the country found to be inhabited to any great distance, west of the Mississippi river; neither is there any other city but St. Louis on the Mississippi above New Orleans, that can render any efficient aid to the building of a railroad west of that river; and while the people in the east are using every effort to reach the Mississippi, those of Missouri are co-operating in their efforts, and by the time the former reach that river, they will, in all probability, find a road already completed to take and carry them 400 miles farther on their way. Practically, therefore, St. Louis is for the present in the route for the Pacific railroad, as far as the north are concerned. On this point it may, with the knowledge we now possess, and in the present condition of the country in reference to its settlement act with entire unanimity.

But it must be borne in mind, that the question of route must be settled by another tribunal than a convention, and as accurate understanding of the topographical features of the country, which divides the Pacific from the Mississippi, is of the highest importance, and must precede all action, we would urge upon the convention the adoption of the most effective measures within their power, to effect this object at the earliest possible moment.

CALIFORNIA.

Hon. Thomas Butler King has presented his report upon the mineral wealth of California to the President. As soon as we can obtain a copy of it we shall give it to our readers.

Gas.

Manufacturers as well as gas companies, will find a good opportunity of supplying themselves with gas fixtures of various kinds by refering to the advertisement of H. N. Hooper & Co. in another column.

Railroad Lettings.

Contractors are invited to examine the advertisement of lettings in another column.

Back Volumes of the RAILROAD JOURNAL

From its commencement can be had on application to this office.

Nashville and Chattanooga Railroad.

ERROR CORRECTED.

In an abstract of the report of the Nashville and Chattanooga railroad of the 9th instant, the subscription of the Georgia Railroad and Banking Co. was accidentally omitted in the table showing the amount of means provided for the above road.—This subscription of $250,000, should be added to the table we gave, making the whole aggregate $2,556,750. It was the Georgia Central railroad that declined to make the subscription expected from it, instead of the Georgia railroad as there stated.

New York Railroads.

We give this week the statistical tables of the returns of the railroads of this State of the past year's operations. They are carefully copied from the report of the State Engineer. They are very imperfect in many respects, and the following roads, viz: the Buffalo and Black Rock, Lockport and Niagara Falls, New York and Harlem, and New York and New Haven made no report whatever. No reason is assigned for this omission, nor is it stated that any steps will be taken to compel the delinquents to furnish the required statement of their affairs. We shall have occasion to refer to the report in a further number.

Explosion of the "Boston."

We alluded in a recent number of our paper to the explosion of the locomotive Boston on the Saratoga and Schenectady Railroad. Below we give the results of the investigation in relation to the causes of this disaster, which seems to be attributable to the same cause which it is believed has produced so many similar explosions of late—the want of sufficient water in the boiler.

STATEMENT.

The report of the explosion of the locomotive engine Boston's boiler, having reached the Schenectady locomotive Works, Monday 11th inst., at 2½ o'clock, P. M., Messrs. E. S. Norris, A. Thompson, E. Caldwell and myself, set out for an examination of the engine.

Proceeding to the spot where the explosion had taken place, we found the engine upset on the foot of the embankment, the dome turned towards the track. The waist or cylindrical part of the boiler, was found to be completely blown out, whilst the whole fire-box, dome and furnace, to all appearances, have received no injury whatever. The frames, braces, connecting rods, in short, all the parts connecting the front part with the back part of the engine, are torn asunder, and all the tubes, as well as the steam-pipe, are torn out of the front tube-sheet, which under the violent strain assumed a concave shape, and was partly rent from the waist of the boiler to which it had been riveted. The first sheet, next to the throat of the fire-box, is ripped open and bent back, so as to enter the furnace from below the grate-bars, the upper part has been completely torn from the seam, leaving a small band forming the lap behind. Thirteen copper tubes have been turned over near the furnace-flue-sheet, to which they are still fast, in such a manner, that they cover the left side of the fire-box.

All these facts show that the seat of the explosion was in the waist of the boiler. An examination of the fragments conclusively proved this to be the case. The parts of the waist to which the check-valves are attached, is severed in two halves. One of these, with the left hand check and a boiler-brace, still fast to it, was found about 10 yards back of the engine, at a small distance from and on the left side of the track, the other was thrown to the right side and fell down a precipice forming the bank of the river on that spot.

An examination of the first fragment elicited the the following facts.

1st. The rupture had taken place in a line *ab* bassing nearly through the centre of the boiler, and being slightly inclined to the horizontal line.

2nd. The line of rupture was irregular, partly following the seams of the boiler, and partly ripping the boiler plate.

3rd. The fragment C, which was the one nearest to the embankment, had assumed the shape represented in the diagram at C'.

4th. Both extremities of that sheet *dd'* show distinctly the dull, bluish-gray color of iron having been nearly red-hot, the inside being quite free from sediment.

5th. The brass check still fastened to the end *d* by its color, presents the appearance of polished brass after exposure to a temperature of fluid lead, or, as it is called a black heat.

6th. The ends of the stud-bolts by which the check is fastened to the boiler, show on the inside the appearance of having been exposed to nearly a red heat, the sediment with which such bolts are invariably found to be covered, has partly peeled off, and shows the gray color of iron which has been heated.

The above facts irresistbily lead to the conclusion that the water at the time of the explosion was below the centre of the boiler,(which exactly coincides with the centre of the checks,) in consequence of which, the parts situated above the centre must have been overheated. The injection of the first jet of cold water under such circumstances must have caused instantaneous explosion, so quick indeed, that the explosive effect could only act on the vicinity of the checks, which clearly accounts for the fire-box not having been injured at all.

Mr. Blackburn superintendent of motive power on the Utica and Schenectady railroad, who arrived at the spot shortly after ourselves, and also undertook a very careful examination, was led to the same conclusion. Indeed the nature of the evidence furnished by the inspection of that one fragment, was such that it could hardly fail to bring conviction as to the cause of the accident to the mind of any intelligent and reflecting observer.

The dusk of the evening not permitting a more minute examination of the furnace, I returned the following morning to the spot. By this time the fragments spoken of above had been removed from the premises. The other piece with the opposite check-valve attached to it, still occupied its position on the bank of the river, and showed, as I am informed by Mr. Blackburn and others, who had examined it, less indication of heat than the one examined previously, inasmuch as only one bolt presented a blue color without sediment, the other bolts still being enveloped in sediment. The check presented also a paler color.

I then proceeded to examine the furnace-flue-sheet which along the upper rows of tubes presented the gray appearances of heated iron, the sediment having to a great extent peeled off, bringing the clean surface of the iron into view. The upper tubes especially those that had been turned over, showed an appearance strikingly different from the lower ones, inasmuch as they were entirely free from mud and sediment, and exhibited a perfectly clean surface. Mr. Blackburn remarks particularly, that the parts of the tubes that were found lying on the snow, or appeared to have come in contact with moisture, presented the appearance of copper heated till nearly red, and then being plunged in water. Mr. Case, who has been engaged for years in making and repairing tubes, pronounced the upper tubes of this boiler to have been overheated, though not enough to anneal the metal.

As an additional fact, going far to prove the overheated state of the boiler at the time of the explosion, it may be mentioned in this place, that fragments of the casing—easily identified as such—have come to hand, which were almost completely turned into charcoal. Now, it is a well known fact, that the jacket of a locomotive boiler under ordinary circumstances, will be slightly charred on the inside, so as to assume a dark brown color. In the present instance, the outside of the wood showed the appearance which might have been expected on the inside, whilst the inside was completely black and partly burnt off.

I shall content myself with having given in the above a truthful record of circumstances as they came to my cognizance, mostly through my own observations, and partly by comparing notes with other reliable observers, especially Mr. Blackburn, to whom great credit is due for his most careful, diligent and unprejudiced investigation of the circumstances attending the lamentable catastrophe, and I shall only add, that in considering all facts ennumerated above, I can only come to the conclusion, that the primary cause of the accident was a want of water in the boiler.

HENRY BACMEISTER.

Schenectady, March 13, 1850.

I concur in the above statements in every particular, and also pronounce it as my opinion, that the throwing of cold water on the heated surfaces of the metal, which heat was produced by a low state of the water, was the cause of the explosion.

VINCENT BLACKBURN.

It is my opinion as above stated, that the upper tubes of the boiler of engine "Boston," were overheated, though not enough to anneal the metal.

LEVY CASE,

I fully concur in the statement of Mr. Bacmeister, and his opinions. ALFRED THOMPSON.

We the undersigned having seen and examined the wreck of the engine "Boston," do agree with Mr. Bacmeister's statement, and fully concur in his opinions.

E. CALDWELL,
THOMAS CONLON,
MAXWELL COX.

Great American Engineering

AND MECHANICAL WORK, just published in medium folio, 75 cts.

Part III of "Specimens of the Stone, Iron and Timber Bridges, &c. &c. of the United States Railroads." By George Dugan, Architect and Civil Engineer.

The present part contains beautifully executed plans, elevations, sections and isometrical views of the elegant timber arch 275 feet span, at Cascade Creek, Pa. on the line of the N. Y. & Erie R. R., and of a plank bridge 100 feet span across the Mahawk River near Rome, on the line of the U. and S. R.R. with the specifications, estimates, bills of timber, iron, etc.

N.B.—This work is published by subscription of the most eminent in the engineering profession of the U. States, and will be completed in 12 parts, at 75 cents each to those who remit their names and subscriptions before the 1st May next, after which the price will be raised to $1 per part.

To those making a present remittance of $5, and the remainder $4, when they have been supplied with the first six parts, the work will be forwarded regularly as published. Parties remitting $9 shall receive it monthly POST-FREE in any part of the United States.

"It is a work that was a great desideratum, and must prove of great benefit to the engineering profession generally, and especially to the tyro in practical engineering and mechanical knowledge; in truth it strikes us, that it would require years of labor and patient toil on the part of a young engineer to prepare the drawings, and collect the information that will be embodied in this work, and can now be secured for the trifling sum of $9"—[Scientific Amer. March 16, 1850.

In connection with this subject (Iron Railroad Structures) we take occasion to call attention again to Mr. Duggan's valuable and expensive publication, exhibiting drawings, with full descriptions of the various stone, iron and wooden bridges, viaducts, tunnels, culverts, etc., of all the Railroads in the United States. Mr. Duggan is an accomplished Architect and Civil Engineer, who came from Ireland to it is country to exercise his profession; but finding Railroad construction here, in many respects, different from that he had been accustomed to in Europe, he applied himself to the study of our system; and the fruits of his researches and investigations embodied in this work, are well calculated to meet the exigencies of engineers, and to assist draughtsmen, bridge builders, mechanics and students. The work will be supplied to subscribers only, in 12 parts, at 75 cenis each.—[N. Y. Journal of Commerce, Feb. 14, 1850.

Published by GEORGE DUGGAN,
172 East Broadway, New York.

Railroad Iron.

THE Undersigned, Agents for Manufacturers, are prepared to contract to deliver Rails of superior quality, and of any size or pattern, to any ports of discharge in the United States.

COLLINS, VOSE & CO.,
158 South St.

New York, November 17, 1849.

Henry J. Ibbotson.

IMPORTER of Sheffield and Birmingham Goods. Also, Agent for the Manufacture of Telegraph Wire. 218 PEARL ST., NEW YORK.

Spikes, Spikes, Spikes.

ANY person wishing a simple and effective Spike Machine, or a number of them, may be supplied by addressing J. W. FLACK,
March 6, 1850. Troy, N. Y.

FOWLER M. RAY'S Patent India-rubber Railroad CAR SPRING.

Troy, February 27, 1850.

We have been using your India-rubber Car Springs for nearly two years—and we take pleasure in saying that in our opinion the rubber has to a certain extent already, and may eventually entirely supersede all other Springs for Railroad Car purposes. We now use it entirely for Draw Springs and Bumpers, considering it better and lighter than steel.

During our two years' experience in the use of it, we have not known any to lose their elasticity, or fail in any way; and we cheerfully recommend the rubber for railroad car springs. Very respectfully,

EATON, GILBERT & CO.

—

Boston, March 5, 1850.

In answer to your enquiry about India-rubber Springs, I have to say that we have used them to a considerable extent on both freight and passenger cars, and also on several of our tenders; and I am very well satisfied that they answer all the purposes for which they are intended. I believe the India-rubber will soon supersede all other springs for cars and tenders. Yours truly, S. M. FELTON,
Supt. Fitchburg Railroad.

—

Office of the New Jersey Railroad Co.,
Jersey City, March 7, 1850.

This is to certify that we have had Mr. F. M. Ray's India-rubber Springs in constant use under our cars, and as Bumper Springs for upwards of two years, and they have in every way given perfect satisfaction.

The present form of spring we deem far superior to the form of Disk, having used both forms, although we have none of those made in Disks at present in use.

We take pleasure in recommending these springs to all railroad companies.

J. P. JACKSON, Vice Prest.
New Jersey Railroad and Trans. Co.

—

Roxbury, February 28, 1850.

In compliance with your request, I take great pleasure in stating the result of my experience in the use of "Ray's Patented Vulcanised India-rubber Car and Engine Springs." We have used them nearly two years, and never had one fail in any way. The *cold weather* does not affect *them*, as it has *other* rubber springs we have used.

With sixteen years' experience as superintendent of machinery on the Boston and Providence railroad, I take pleasure in saying that your springs are the best we ever used, or I ever saw used elsewhere. We have 20 cars rigged with them, of which I can say that the springs are as good now as when first applied. I put 24 lbs. of the rubber under the forward end of one of our heaviest engines, taking off 250 lbs. of steel springs—it has been in use 18 months, and is in as good condition now as when first put under the engine.

Very respectfully yours,
GEO. S. GRIGGS,
Supt. of Machinery, Boston and Prov. R.R.

—

Supt. Office N.Y. & H. R.R.,
New York, March 8, 1850.

This is to certify that we have used the Rubber Springs manufactured by Mr. F. M. Ray for the past twenty months, "both for Passenger and Freight Car Springs and Bumpers, and of different sizes," and have in every case given entire satisfaction, and I consider them the best spring now in use

M. SLOAT, Supt.

—

Jersey City, March 9, 1850.

This is to certify that the present form of Mr. F. M. Ray's India-rubber Car Spring I consider far superior to the form of Disk, having used both forms.

I take pleasure in recommending these springs to all railroad companies. DAVID H. BAKER,
Foreman of Car Shop of N.J. R.R. & Trans. Co.

—

Harlem R.R. Depot,
New York, March 7, 1850.

This is to certify that we have used Mr. F. M. Ray's India-rubber Springs for over eighteen months, and find them to be easy and durable, and recommend them to railroad companies as being superior to anything we have tried. J. M. SMART,
Foreman at 42d St. Depot.

—

Railroad Iron.

OF ANY PATTERN AND WEIGHT,
Of a Favorite Brand,
And deliverable in Bond, or Duty paid, at any Port of the U. S., contracted for on favorable terms, by
CHARLES ILLIUS,
20 Beaver St., New York.

Pig and other Iron also contracted for. Sole Agent for "*Baxter's Machine and Burning Oil*"—particularly adapted for "*Railroads*" and other Machinery—Preferred to Sperm by the many now using it, and 25 *per cent. cheaper.*

United States Railroad Guide and Steamboat Journal.

CONTAINING OFFICIAL TIME ADVERTISEMENTS, Tables of Stations, Distances, Fares, Time, etc., with much miscellaneous matter for the travelling public. Price 12 cents a copy. Yearly subscription $1. Published at 43 Ann street, New York.

LAKE SUPERIOR LINE. Cleveland and Detroit,

TO
SAULT STE. MARIE, CARP RIVER, COPPER HARBOR, EAGLE RIVER, ISLE ROYAL, ONTONAGON AND LA POINT.

The Proprietors of this line having added largely to their facilities for transportation on this route, will be prepared to ship Goods to any part of Lake Superior during the coming season, and contract for the delivery of Copper Ore to either Boston, New York, or Pittsburg, being connected with the Troy and Western Line, from Detroit to New York, and a Daily line of Canal Boats

FROM CLEVELAND TO PITTSBURG.

Lakes Huron and Erie.

For this portion of the route, the Proprietors are fitting up a large Boat, with a powerful low pressure engine, and a spacious upper cabin, with state rooms, to take the place of the Franklin, which will leave CLEVELAND every *Monday Evening* at 7 o'clock, and DETROIT every *Tuesday Afternoon* at 2 o'clock, going to MACKINAW and the BRUCE MINES, and arriving at SAULT STE. MARIE on Thursday morning. The Franklin will leave Detroit every Friday for Mackinaw and Sault Ste. Marie, via the Bruce Mines. For the transportation of heavy masses of *Copper*, a Propeller will make trips as occasion may require.

Lake Superior.

Mr. McKnight, one of the Proprietors, is constructing a Wharf to the Channel Bank, at the head of the Portage, which will enable them to load their Propellers, NAPOLEON AND INDEPENDENCE, with but 24 hours' detention at Sault Ste. Marie. One of the Propellers will leave every *Friday*, making a trip through the Lake, touching at Carp River, Ontonagon and Isle Royal.

The great expense incurred in building wharves to facilitate business, it is hoped, will entitle the Proprietors of this Line to Patronage. Goods shipped by either G. WILLIAMS & CO., or S. P. BRADY, Agents, Detroit, will be receipted through to their destination on Lake Superior. Letters addressed to S. McKNIGHT, Detroit, or Sault Ste. Marie, will receive attention. Supplies will be purchased and delivered at any point on Lake Superior, on the best possible terms, and all orders filled with articles of as good quality as the market affords.

Canada Line.

To facilitate the forwarding of Goods for the Canada Companies, a connection has been made with PARK & CO., managing owners of the Propeller *Earl Cathcart*, forming a direct line from Montreal to the Bruce Mines and Sault Ste. Marie. Goods sent by this line, care of PARK & CO., Amherstburg, or CHAS. HUNT, Esq., Windsor, will be immediately forwarded, and at prices decidedly to the advantage of parties in Toronto or other Canadian Ports.

S. M'KNIGHT,
J. R. LIVINGSTON,
P. B. BARBEAU.

January, 1850.

AGENTS.

G. Williams & Co., } Detroit.
S. P. Brady, }
P. L. Sternberg & Co., Buffalo.
Charles Hunt, Windsor.
Park & Co., Amherstburg.
W. A. Otis & Co., } Cleveland.
Crawford and Chamberlain, }
Rice, Clapp & CO., New York.
W. M. Gorrie, Toronto.

STABILITY—SECURITY—PERPETUITY.

Mutual Life Insurance Co. of New York.

No. 35 WALL STREET.

A MILLION OF DOLLARS

Securely invested in Bonds and Mortgages on real estate in this city and Brooklyn, and stocks of the State and City of New York and United States Government.

This fund is rapidly increasing, by a widely extended and prosperous business.

The company declared a dividend of profits of fifty-two per cent. on all existing policies on the 31st of January, 1848.

All the Profits are Divided Among the Insured.

The premiums are payable in Cash annually, semi-annually, or quarterly, interest being added on the deferred payments.

The cash principle adopted by this company secures to the parties for whose benefit the insurances are effected, the whole of the advantages, without subjecting them to the heavy drawback of accumulated premium notes.

Persons may effect insurance on their own lives and the lives of others.

A married woman can insure the life of her husband, the benefits of which are secured by law for the exclusive use of herself or children.

Clergymen and all others dependent upon salaries or their daily earnings are specially invited to avail themselves of a resource whereby their surviving families may be secured from the evils of penury.

Pamphlets explanatory of the principles of Mutual Life Insurance, and illustrating its advantages, with forms of application, may be obtained at the office of the company, 35 Wall street, or of any of its agents.

TRUSTEES.

Jos. B. Collins,	David C. Colden,
Wm. J. Hyslop.	Alfred Edwards,
R. H. McCurdy,	Wm. Betts,
Fred. S. Winston,	Joseph Blunt,
C. W. Faber,	Isaac G. Pearson,
John P. Yelverton,	Henry Wells,
Theo. Sedgwick,	Wm. Moore,
Stacy B. Collins,	Zebedee Cook,
John H. Swift,	Jona. Miller,
John Wadsworth,	David A. Comstock,
S. M. Cornell,	Robert Schuyler,
Gouv. M. Wilkins,	James Chambers,
John V. L. Pruyn,	Joseph Tuckerman,
Fred. Whittlesey,	Moses H. Grinnell,
Charles Ely,	Wm. J. Banker,
John C. Cruger,	Eugene Dutilh,
Walter Joy,	Francis S. Lathrop,
Alfred Pell,	John C. Thatcher.

JOSEPH. B. COLLINS, President.
ISAAC ABBATT, Secretary. 3m9

FARMERS! ATTENTION!!

John Mayher & Co's

NEW AGRICULTURAL WAREHOUSE AND SEED STORE,
197 WATER STREET, NEW YORK.

Where they have for Sale, the largest and most complete assortment of Farming Implements, ever offered for sale in this city—all of which they will sell 10 per cent. Cheaper than the same kind of Goods can be bought at any other house in the city. Our Goods are all Warranted to give satisfaction.

FARMERS wanting to purchase, will please call and examine our *Stock* before buying elsewhere.

Among our assortment may be found the Celebrated Highest Premium Eagle Ploughs! together with all the most approved Ploughs now in use.

Also,—Horse Powers, Threshing Machines, Fan Mills, Corn Shellers, Straw Cutters, Corn Mills, Seed Sowers, Churns, Ox Yokes, Ox Scrapers, Hay Rakes, Horse Rakes, Patent Chain Pump (that never freezes nor rusts), and other Pumps; in fact we have everything for Farming Purposes—together with Guano, Bone Dust and other Fertilizers.

JOHN MAYHER & CO.,
197 Water st., N. Y.

February 9, 1850.

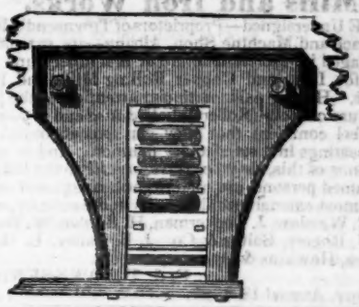
N.B.—J. M. & Co. also continue their Old Stand, at 195 Front street, near Fulton Market.

CAUTION.

RAILROAD COMPANIES and others are hereby cautioned against using or vending our improvement for easing the lateral motion as applied on Railroad Cars. Letters Patent having been granted to us in 1841, any party or parties so making or using said improvement without license from us will be proceeded against according to law.

DAVENPORT & BRIDGES.

FULLER'S PATENT INDIA RUBBER SPRING.



THESE SPRINGS ARE THE CHEAPEST, the lightest and most durable of any yet known. They are easily applied to new or old cars, and there is small possibility of any accident occurring to them.

Other parties through Mr. Ray set up claims to an India Rubber Spring which, though the same in principle, is very inferior in its working and durability.—Actions are in progress for an Infringement on Fuller's Patent against parties using that Spring.

The superiority of Fuller's Spring over that claimed by Mr. Ray is fully established and has frequently been testified to. The following are from gentlemen who have had much experience with both Springs.

"It will afford me pleasure to recommend your springs to the companies in this region, in preference to Ray's which I am confident are inferior in mechanical arrangement to yours." JOHN M'RAE,
Engineer S. Carolina R. R., Charleston.

—

"I do not hesitate to allow you to say that I concur in Mr. M'Rae's opinion that Ray's springs are inferior in mechanical arrangement to Fuller's. I repeatedly expressed that opinion long before Mr. M'Rae had seen your springs (as I believe) and entertain it still." WM. PARKER,
Gen'l Supt. of Baltimore and Ohio R. R.

—

Office of Sup't Norwich & Worcester R.R Co. }
December 26, 1849. }

"I most fully concur in the opinion of Jno. McRae, Engineer of S. Carolina Railroad, that 'Rays Springs are inferior to Fuller's Springs;' and shall with pleasure recommend them to all Railroad Companies for adoption. I have used both springs on this road and have no hesitation in saying that I should in all cases prefer Fuller's Spring."

SAM'L H. P. LEE, JR.,
Sup't and Engineer.

—

Office B. & P. R. R. Co., }
Boston, 20th December, 1849. }

"This company have cars fitted up with both Ray's and Fuller's 'Metallic India Rubber Springs,' and I do not hesitate to say that Fuller's arrangement is *very much superior* to Ray's.

W. RAYMOND LEE, Supt.

—

The following result has been obtained by experiment upon one railroad.

A set of Trucks fitted with Steel Springs cost	$190·77	and weigh 2355 lbs.
The same with Fuller's Springs, . . .	131·71	" 1911 lbs.
Difference, . .	$59·06	" 444 lbs.

Not only is there an advantage in the cost, but owing to the great reduction in weight, the car can be made lighter throughout, and so an enormous saving in weight may be effected in a Train.

G. M. KNEVITT, 38 Broadway, N. Y.,
General Agent for the U. S.

The Springs can also be had of
JAMES LEE & CO., 18 India Wharf, Boston, &
JAS. THORNLEY, 110 Chestnut St., Philad.
January 2, 1850.

WHISTLER MONUMENT Association.

MAJOR T. S. BROWN having, in leaving this country, resigned his office as Treasurer of this Association, the Committee oppointed for that purpose have selected as his successor GEO. M. DEXTER, Esq., of Boston.

Those desiring to subscribe will therefore please direct their communications to Geo. M. Dexter, Civil Engineer, etc., Boston, Mass.

A. W. CRAVEN, Secretary, etc.
New York, February 22, 1850.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burtt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc., etc.

F. & T. TOWNSEND.

Albany, August 18, 1849.

Arch St. Machine Shop.

BIRKENBINE, MARTIN & TROTTER,
Makers of
STEAM ENGINES,
and
HYDRAULIC MACHINERY,
NO. 16 ARCH STREET,
PHILADELPHIA,

Will construct Steam Engines, Pumps, for Draining Mines and Land; supplying Water to Towns, Factories, Farms, etc;
Also, Street Stops, Fire Plugs, Water Tanks, and Hydraulic Rams, with
(BIRKINBINE'S PATENT VALVES.)
B., M. & T. contract for Warming and Ventilating Buildings by Steam or Warm Water.

THE NEWCASTLE MANUFACTURING Co. continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steamboats. Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,
President of the Newcastle Manuf. Co.

Brown's Old Established SCALE WARE HOUSE,

NO. 234 WATER ST., NEW YORK.

THE Subscriber, Practical Manufacturer of Scales of every description, respectfully asks the attention of Railroad Companies to his Improved Wrought Iron Railroad Track and Depot Scales which for strength, durability, accuracy, convenience in weighing, and beauty of workmanship, are not surpassed by any others in this country.

He is aware that this is rather a bold assertion for him to make, yet he can say with confidence that they have but to be tried to give them precedence over all others.

J. L. BROWN.

☞ Bank Scales made to order, and all Scales of his make Warranted in every particular.

References given if required. 4tf

ENGINEERS.

Bancks, C. W.,
Civil Engineer, Vicksburg, Miss.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Buckland, George,
Troy and Greenbush Railroad.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Cozzens, W, H.,
Engineer and Surveyor, St. Louis, Mo.

Davidson, M. O.,
Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
South Oyster Bay, L. I.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.
Southwestern Railroad, Macon, Ga.

Johnson, Edwin F.
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,
Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston,

Prichard, M. B.,
East Tennessee and Georgia R. R., Cleveland, Tenn.

Roebling, John A.,
Trenton, N. J.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Sanford, C. O.,
South Side Railroad, Virginia.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Sours, Peter,
Rahway, New Jersey.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukie, Wisconsin.

Wormeley, Preble,
Central Ohio Railroad, Zanesville, Ohio.

HOTELS.

JONES' HOTEL,
NO. 152 CHESTNUT STREET,
PHILADELPHIA.
BRIDGES & WEST, ... Proprietors.

DUNLAP'S HOTEL,
On the European Plan,
NO. 135 FULTON STREET,
Between Broadway and Nassau St.,
NEW YORK.

BUSINESS CARDS.

Nathan Caswell,
METAL BROKER, 69 WALL ST., N.Y.
For the Purchase and Sale of Railroad Iron (new and old,) Boiler Plates, Pig and Bar Iron, Lead, Tin, Copper, Spelter, etc. Refers to
Messrs. Boorman, Johnston, & Co., New York.
" Grinnell, Minturn & Co., "
" Barston, Pope & Co., "
" Earps & Brink, Philadelphia.
" E. Pratt & Brother, Baltimore.
John Barstow, Esq., Providence.
Lewis Bullard, Esq., Boston.
February 9, 1850. 6m*

VanRensselaer Stevens,
Sup't Transortation Providence and Worcester R.R., Providenc, R.I. Has had 13 years' experience in Operating Railroads. Will go South or West if applied to.

J. & Riley Carr,
Manufacturers of Cast, Shear, German and Blister
STEEL,
Of all Descriptions, Warranted Good.
BAILEY-LANE WORKS, SHEFFIELD.

R. S. DENTON, *Agent,*
NO. 20 CLIFF ST., NEW YORK.

STEEL AND FILES.
R. S. Denton,
20 CLIFF STREET, NEW YORK,
AGENT FOR
J. & Riley Carr's
BAILEY-LANE WORKS, SHEFFIELD,
Manufacturers of Cast, Shear, German and Blister
STEEL
Of all descriptions. *Warranted* Good
FILES.
Manufacturers of Machinists' Warranted Best Cast Steel *Files*, expressly for woring upon Iron and Steel, made very heavy for recutting.
☞ A full Stock of *Steel* and *Files* at all times on hand. 6m4

Cumberland, (Md.,) Coals for Steaming, etc.
ORDERS RECEIVED FOR AND FILLED by J. COWLES, 37 Wall St., N. Y.

George O. Robertson,
BROKER IN SCOTCH AND AMERICAN PIG IRON;
Bar Iron, Lead, Spelter, Tin, Copper, etc.,
No. 4 Liberty Place, MAIDEN LANE,
(Near Broadway,)
NEW YORK

Manufacture of Patent Wire ROPE AND CABLES,
For Inclined Planes, Suspension Bridges, Standing Rigging, Mines, Cranes, Derrick, Tillers, &c., by
JOHN A. ROEBLING, Civil Engineer,
TRENTON, N. J.

Samuel D. Willmott,
MERCHANT, AND MANUFACTURER OF
CAST STEEL WARRANTED SAWS,
IMPORTER OF THE
GENUINE WICKESRLY GRINDSTONES
NO. 8 LIBERTY STREET,
NEW YORK.

Doremus & Harris,
ANALYTICAL & CONSULTING CHEMISTS,
179 BROADWAY, NEW YORK.
☞SCHOOL OF CHEMISTRY.☜

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.
Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal "CED —'Potomac' and other good brands of Pig Iron.

Railroad Car Manufacturer's Furnishing Store.

F. S. & S. A. MARTINE,

IMPORTERS AND MANUFACTURERS OF

RAIL ROAD CAR & CARRIAGE LININGS,

PLUSHES, CURTAIN MATERIALS, ETC.,
112 WILLIAM ST., NEAR JOHN.

3-4 and 6-4 Damasks, Union and Worsted; Moreens, Rattinetts, Cloths, Silk and Cotton Velvets, English Buntings

S. W. Hill,

Mining Engineer and Surveyor, Eagle River, Lake Superior.

Alfred W. Craven,

Chief Engineer Croton Aqueduct, New York.

Starks & Pruyn,

MANUFACTURERS OF ALL KINDS OF

STEAM BOILERS,

52 and 54 Liberty, corner of Pruyn street

Nathan Starks, Wm. F. Pruyn, ALBANY. Special Partner R. H. Pruyn.

Iron Railing, Bank and Vault Doors, Iron Shutters Bridge and Roof Bolts, Heavy Jobbing and Forging of all kinds.

☞ For particularss ee Adv. in another column.

To Engineers and Surveyors.

E. BROWN AND SON Mathematical inst. makers No. 27 Fulton Slip, New York, make and keep for sale, Theodolites, Levelling inst., Levelling rods, Surveyors Compasses, and Chains, Cases of Mathematical drawing insts. various qualities, together with a general assortment of Ivory Scales and small insts. generally used by Engineers.

Samuel Kimber & Co.,

COMMISSION MERCHANTS

WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.

July, 27, 1849.

James Herron, *Civil Engineer*,

OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,

PATENTEE OF THE

HERRON RAILWAY TRACK.

Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

To Railroad Companies.

—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.

NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,

Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.

May 16, 1849.

Machinery Warehouse.

S. C. HILLS, No. 43 Fulton street, New York, has constantly for sale Steam Engines, Boilers, Lathes, Chucks, Drills, Planers, Force and Suction Pumps; Tenoning, Morticing and Boring Machines, Shingle Machines, Bolt and Nut Machines, Belting, Oil, Iron and Lead Pipe; Rubber, Percha and Leather Hose, &c., &c.

S. C. H.'s arrangements with several machine shops are such that he can supply, at very short notice, large quantities of machinery.

November 23, 1849.

Cruse & Burke,

Civil Engineers, Architects and Surveyors,

Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.

May 26, 1849.

Eaton, Gilbert & Co.,

Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

Hudson River Foundry,

THOMAS & COLLINS,

130 Quay Street, Albany.

To Railroad & Navigation Cos.

MR. M. BUTT HEWSON, *Civil Engineer*, offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.

Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

Walter R. Johnson,

CIVIL AND MINING ENGINEER AND ATTORNEY for Patents. Office and Laboratory, F St., opposite the Patent office, Washington, D. C.

Cop Waste.

CLEAN COP WASTE, suitable for cleaning Railroad, Steamboat and Stationary Engines, constantly an hand and for sale by

KENNEDY & GELSTON,
5½ Pine St., New York.

October 27, 1849, 3m

Ranstead, Dearborn & Co.,

MANUFACTURERS OF

LOCOMOTIVE CRANKS AND CAR AXLES,

ALSO

WROUGHT IRON SHAFTING,
And All Kinds of Hammered Shapes.

Forge at Commercial Point, Dorchester,
Office 25 Foster's Wharf, opposite No. 211 Broad St.
BOSTON.

IRON.

Iron.

Pig Iron, Anthracite and Charcoal; Boiler and Flue Iron, Spring and Blistered Steel, Nail Rods, Best Refined Bar Iron, Railroad Iron, Car Axles, Nails, Stove Castings, Cast Iron Pipes of all sizes, Railway Chairs of approved patterns' for sale by

COLEMAN, KELTON & CAMBELL,
109 N. Water St., Philadelphia.

IRONDALE PIG METAL, MANUFACTURED and for sale by the Bloomsburg Railroad Iron Co.

DUDLEY FISHER, Treasurer.
75 N. Water St., Philadelphia.

Railroad Iron.

500 Tons, afloat, weighing 57 pounds per lineal yard, for sale by

COLLINS, VOSE & CO.,
158 South St.

New York, November 17, 1849. 1m46

Railroad Iron.

1675 Tons, weighing about 61 lbs. per yard, 90 tons, weighing about 52 lbs. per yard, and 825 tons, weighing about 53½ lbs. per yard, of the latest and most approved patterns of T rail, for sale by

BOORMAN, JOHNSTON & CO.,
119 Greenwich street.

New York, Feb. 25, 1850.

N.B.—B., J. & Co are also prepared to take contracts for English rails, delivered in any of the Atlantic ports of the Unitad States.

Railroad Iron.

THE UNDERSIGNED, HAVING made arrangements abroad, are prepared to contract for the delivery of Foreign rails, of approved brands upon the most favorable terms.

They will also make contracts for American rails, made at their Trenton works, from Andover Iron, in whole or in part, as may be agreed upon.

They are prepared to furnish Telegraph, Spring and Market Wire; Braziers and Wire Rods; Rivets and Merchant Bars to order, all made exclusively from Andover Iron. The attention of parties who require iron of the *very best* quality for special purposes, is respectfully invited.

COOPER & HEWITT,
17 Burling Slip, New York.

February 15, 1850.

Glendon Refined Iron.

Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "

Axles, Locomotive Tyres,

Manufactured at the Glendon Mills, East Boston, for sale by GEORGE GARDNER & CO.,
5 Liberty Square, Boston, Mass.

Sept. 15, 1849. 3m37

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES. — The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head. From the excellence of the material always used in their manufacture, and their very general use for rail roads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, *Agent.*
Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at factory prices, of Erastus Corning & Co Albany; Merritt, & Co., New York; E. Pratt & Brother, Baltimore, Md

LAP—WELDED

WROUGHT IRON TUBES

FOR

TUBULAR BOILERS,

FROM 1 1-2 TO 8 INCHES DIAMETER.

These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers

THOMAS PROSSER,
Patentee.
28 Platt street, New York.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron. THOMAS B. SANDS & CO.,
22 South William street,

February 3, 1849. New York.

Iron Store.

THE Subscribers, having the selling agency of the following named Rolling Mills, viz: Norristown, Rough and Ready, Kensington, Triadelphia, Pottsgrove and Thorndale, can supply Railroad Companies, Merchants and others, at the wholesale mill prices for bars of all sizes, sheets cut to order as large as 58 in. diameter; Railroad Iron, domestic and foreign; Locomotive tire welded to given size; Chairs and Spikes; Iron for shafting, locomotive and general machinery purposes; Cast, Shear, Blister and Spring Steel; Boiler rivets; Copper; Pig iron, etc., etc.

MORRIS, JONES & CO.,
Iron Merchants,
Schuylkill 7th and Market Sts., Philadelphia.

August 16, 1849. 1y33

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. J. F. WINSLOW, *President*
Troy, N.Y.
ERASTUS CORNING, Albany
WARREN DELANO, Jr., N.Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.

November 6, 1848.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phœnix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehannah river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO.,
45 North Water St., Philadelphia.

March 15, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,

Corner of North and Monument Sts.,—Baltimore,

HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for

Locomotive or Stationary Steam Engines,
Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills,
Slide, Hand or Chuck Lathes,
Machinery for cutting all kinds of Gearing.
Hydraulic, Tobacco and other Presses,
Car and Locomotive patent Ring Wheels, warranted,
Bridge and Mill Castings of every description,
Gas and Water Pipes of all sizes, warranted,
Railroad Wheels with best faggotted axle, furnished and fitted up for use, complete

☞Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

☞ Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by

ICHABOD WASHBURN.

Worcester, Mass., May 25, 1849.

American and Foreign Iron.

FOR SALE,

300	Tons	A 1, Iron Dale Foundry Iron.
100	"	1, " " "
100	"	2, " " "
100	"	" Forge "
400	"	Wilkesbarre " "
100	"	"Roaring Run" Foundry Iron.
300	"	Fort " "
50	"	Catoctin " "
250	"	Chikiswalungo " "
50	"	"Columbia" "chilling" iron, a very superior article for car wheels.
75	"	"Columbia" refined boiler blooms.
30	"	1 x ¼ Slit iron.
50	"	Best Penna. boiler iron.
50	"	"Puddled" "
50	"	Bagnall & Sons refined bar iron.
50	"	Common bar iron.

Locomotive and other boiler iron furnished to order.

GOODHUE & CO.,
New York. 64 South street

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON,
No 57 South Gay St., Baltimore, Md.,

Offer for sale *Hot Blast* Charcoal *Pig Iron* made at the *Catoctin* (Maryland), and *Taylor* (Virginia), *Furnaces; Cold Blas.* Charcoal Pig Iron from the *Cloverdale* and *Catawba*, Va., Furnaces, suitable for *Wheels* or *Machinery* requiring *extra* strength; also *Boiler* and *Flue Iron* from the mills of Edge & Hilles in Delaware, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.

American Pig Iron of other brands, and *Rolled* and *Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and Rich & Cos. New York Salamander Iron Chests.

Baltimore, June 14, 1849. 6 mos

Wheel, Forge and Foundry Iron.

LOCUST GROVE Wheel Iron of great strength and superior chilling property.

Balt. Charcoal Forge Iron, from Patuxent, Curtis Creek and Gunpowder furnaces.

Elkridge Foundry Iron, of superior strength and softness. Anthracite and Charcoal Iron from Pennsylvania and Virginia. Gas and Water Pipes, Lamp Posts from Elkridge furnace.

LEMMON & GLENN,
6m9 62 Buchanan's Wharf, Baltimore.

Iron.

THE SUBSCRIBERS having resumed the agency of the New-Jersey Iron Company, are prepared to execute orders for the different kinds and sizes of Iron usually made at the works of the company, and offer for sale on advantageous terms.—

150	tons	No. 1 Boonton Foundry Pig Iron.	
100	"	No. 2	do. do.
300	"	Nos. 2 & 3 Forge	do. do.
100	"	No. 2 Glendon	do. do.
140	"	Nos. 2 & 3 Lehigh Crane	do do.
100	"	No. 1 Pompton Charcoal	do.
100	"	New-Jersey Blooms	
50	"	New-Jersey Faggoting Iron, for shafts	

Best Bars, ¼ to 4 inch by ¼ to 1 inch thick.
Do do Rounds and Squares, ½ to 3 inch.
Rounds and Squares, 3-16 to 1 inch.
Half Rounds, ¼ to 1 in. Ovals & Half Ovals ¼ to 1½ in.
Bands, 1½ to 4 inch. Hoops, ½ to 2 inch.
Trunk Hoops, ½ to 1½ in. Horse Shoe & Nut Iron.
Nail Plates. Railroad Spikes.

DUDLEY B. FULLER & Co., 139 Greenwich-st. and 85 Broad-st.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,

PARK WORKS, SHEFFIELD,

Double Refined Cast Steel—square, flat and octagon.
Best warranted Cast Steel—square, flat and octagon.
Best double and single Shear Steel—warranted.
Machinery Steel—round.
Best and 2d gy. Sheet Steel—for saws and other purposes.
German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.
Genuine "Sykes," L Blister Steel.
Best English Blister Steel, etc., etc., etc.

All of which are offered for sale on the most favorable terms by WM. JESSOP & SONS,
91 John street, New York.

Also by their Agents—

Curtus & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.
May 6, 1848.

Ogden & Martin's ROSENDALE CEMENT.

WE are prepared to enter into arrangements for supplying our Cement for public works or other purposes. We warrant the cement equal in every respect to any manufactured in this country. It attains a great degree of hardness, setts immediately under water, and is a superior article for masonry coming in contact with water, or requiring great strength.

For sale in tight barrels, well papered, at their office by OGDEN & MARTIN, 104 Wall st.

February 16, 1850. 1y*

The above cement is used in most of the fortifications building by government.

JOHNSON, CAMMELL & Co's Celebrated Cast Steel,

AND

ENGINEERING AND MACHINE FILES,

which for quality and adaptation to mechanical uses, have been proved superior to any in the United States. Every description of square, octagon, flat and round cast steel, sheet, shovel and railway spring steel, best double and single shear steel, German steel, flat and square, goat stamps, etc. Saw and file steel, and steel to order for any purposes, manufactured at their Cyclops Steel Works Sheffield.

JOHNSON, CAMMELL & CO.,
100 William St., New York.

November 23 1849.

Railroad Iron.

1,500	Tons	weighing	58	lbs.	per lineal yard.
500	"	"	57	"	"
500	"	"	56	"	"
500	"	"	60 & 61	lbs,	"

Also 2½x½ flat rails. All the above being of approved patterns. For sale by

DAVIS, BROOKS, & CO.,
68 Broad street.

N.B.—Rails imported on commission, or at a fixed price.

CUT NAILS OF BEST QUALITY, BAR IRON (including Flat Rails) manufactured and for sale by FISHER, MORGAN & CO.,
75 N. Water St., Philadelphia.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.

May 28, 1849.

To Steam Engine Builders.

THE Undersigned offer for sale, *at less than half its cost*, the following *new machinery*, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz.

2 Wrought Iron Cranks, 60 inches from centre to centre.
1 Do. do. Connecting Rod Strap.
2 Do. do. Crank Pins.
1 Eccentric Strap.
1 Diagonal Link with Brasses.
1 Cast Iron Lever Beam (forked).

The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,
No. 57 South Gay St., Baltimore, Md.

Sept. 12, 1849.

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhoffers Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by

E. & G. W. BLUNT,
No. 179 Water St., cor. Burling Slip.

New York, May 19, 1849.

Ballard's Improved JACK-SCREW.

PATENTED.

THE ADVANTAGES OF THIS Screw for Stone Quarries, Railroads, Steam Boiler Builders, and for other purposes are superior to any other similar machine.

The improvement consists in being able to use either end of the screw, as occasion requires.

It is capable of raising the heaviest Locomotive with ease, being portable, strong and powerful, and not likely to get out of order.

Many Railroad Companies and Boiler Makers have them in use—by whom they are highly recommended.

JACK SCREWS,

of various sizes, power and price, constantly on hand at the manufactory.

No. 7 Eldridge Street,
near Division Street.

New York, Jan. 19, 1850.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND,
Prest. Beaver Meadow Railroad & Coal Co.,
Philadelphia.
or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.

May 19, 1849. 20uf

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1¼ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address J. F. WINSLOW, *Agent*,
Albany Iron and Nail Works.

To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and *warranted to perform well.* Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price $1,500.

Address J. B. MOORHEAD,
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia.

September 6, 1849.

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer—Fuller's Patent—Hose* from 1 to 12 inches diameter. Suction Hose. *Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands.* These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.

New York, May 21, 1849.

Fire Brick.

THE Subscribers have constantly on hand Rafford's Stourbridge, Oak Farms Stourbridge, Lister, Wortley, Red and White Welsh Fire Bricks, common and fancy shapes. Also,

ROOFING SLATES,

from the best Welch quarries, and of all sizes. Also,

COAL,

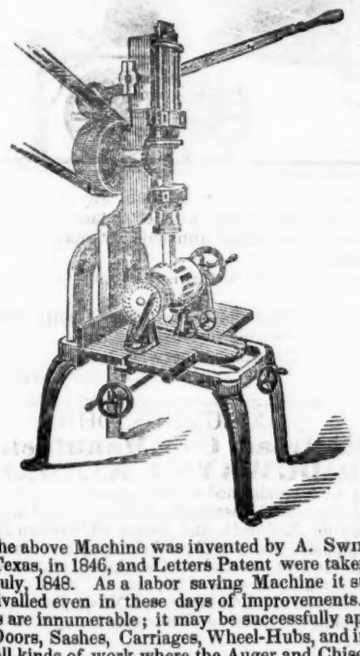
of all kinds—Liverpool Orrell and Cannel, Scotch, New Castle, Pictou, Sidney, Cumberland, Virginia, and all kinds of Anthracite coals. Also,

Pig Iron, Salt, etc., etc., for sale at the lowest market price. Apply to

SAMUEL THOMPSON & NEPHEW,
275 Pearl and 43 Gold Sts., New York.

November, 23, 1849.

Capt. Alfred Swingle's PATENT BORING & MORTISING MACHINE.



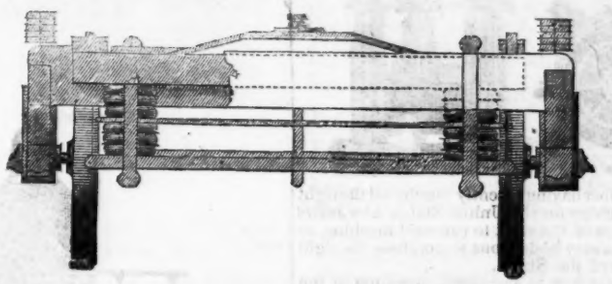
The above Machine was invented by A. SWINGLE, of Texas, in 1846, and Letters Patent were taken out in July, 1848. As a labor saving Machine it stands unrivalled even in these days of improvements. Its uses are innumerable; it may be successfully applied to Doors, Sashes, Carriages, Wheel-Hubs, and in fact to all kinds of work where the Auger and Chisel can be brought to bear.

The only limit to the speed of the working of this machine is the heating of the tools used. It will perform at least the labor of twelve men, and in vastly better manner, and can be worked equally well by steam power or by hand. It has been used and has given universal satisfaction.

For further information apply to H. B. TEBBETTS, 40 Wall St., New York, to whom all orders are to be addressed.

New York, December 15, 1849.

FULLER'S PATENT
INDIA RUBBER CAR SPRINGS.



RAILROAD COMPANIES are cautioned, before purchasing Springs, to examine the actual patents and judge for themselves.

Persons, under the Title of the New England Car Company, seeking fraudulently to invade Fuller's rights have put forth so many statements for the purpose of misleading the public, that an enumeration of some facts is absolutely necessary, for the purpose of putting persons interested upon their guard.

Fuller's patent is for the application of Discs of India-rubber with Metal Plates, for forming Springs for Railway Cars and Carriages—either one disc and two plates, or ten discs and plates, or any other number, are equally covered by the patent. Fuller is not bound to the use of short discs—he may use long discs and plates.

Ray's patent is simply and wholly the forming of air tight rubber cylinders, with hoops or bands round the outside, and the combination of elasticity of India rubber, with the elasticity of atmospheric air confined in the cylinder, and in no part of his patent is he authorised to use the form of spring which he is now fraudulently supplying to Railroad Companies. Such springs are direct and positive infringements of the very letter of Fuller's patent.

Fuller's patent is dated October, 1845, Ray's patent, August, 1848.

The spring patented by Ray never has been put in operation, and never can be made useful for Railroad cars.

A mere experiment, even if made, it is well known does not prove an invention; and it is ridiculous for such parties to hope to mislead the Presidents and Superintendents of Railroad companies, by claiming the invention because Ray alledges he made an experiment—which Fuller had made before him—had actually brought into working order, and obtained a patent for—and this too before Mr. Ray states he made his experiment—and that experiment not claimed to have been applied to a car or carriage.

Besides, the invention could not have been developed until India rubber, properly Vulcanised, could be made of a sufficient thickness. In the United States the art of vulcanising rubber by steam heat, (by which means only can a body of rubber having any considerable thickness be vulcanised,) was not introduced until after the grant by the American government of the patent for springs to Fuller—whereas the process of vulcanising rubber by steam heat was invented in England about three years previously, and was used by Fuller there. This fact refutes entirely the claim of invention put forth by Mr. Ray, and proves the impossibility of his pretensions being true.

Fuller was the first and only inventor of the spring. A Mr. Dorr, whose connection with Mr. Goodyear is well known in this country, applied in England to Mr. Fuller, after he had published and patented his invention, and introduced another party for the purpose of obtaining the agency for the United States. They were furnished with a complete set of drawings and models, and with instructions to make arrangements for the supply of material of American manufacture—from that hour to the present not a single communication has been received from them. Some of these identical models have been traced into the hands of parties now seeking to invade Fuller's rights, and who have exhibited them as specimens of their own invention.

After this, the conveyance was made by Goodyear to certain parties here for the use for railroad springs of what he calls his Metallic rubber. Comment is unnecessary.

There are 5 or 6 different processes for the manufacture of vulcanised rubber, patented by as many different parties, some here, some in England, either of which would probably make good springs.

A large and powerful company has been organised under [illegible], the particulars of which shall be given [illegible].

An action has been commenced against three railroad companies for infringement; and all other parties will assuredly be prosecuted if they continue farther to infringe upon Fuller's patent.

W. C. FULLER,

The only persons authorised to supply the Springs are G. M. KNEVITT, 38 Broadway, N. York, General Agent for the U. S.: and JAS. LEE & Co., 18 India Wharf, Boston. JOHN THORNLEY, Chestnut st., Philad.

FAIRBANKS' RAILROAD SCALES.—THE subscribers are prepared to construct at short notice, *Railroad* and *Depot Scales*, of any desired length and capacity. Their long experience as manufacturers—their improvements in the construction of the various modifications, having reference to strength, durability, retention of adjustment, accuracy of weight and dispatch in weighing—and the long and severe tests to which their scales have been subjected—combine to ensure for these scales the universal confidence of the public.

No other scales are so extensively used upon railroads, either in the United States or Great Britain;—and the managers refer with confidence to the following in the United States.

Eastern Railroad.	Boston & Maine Railroad.
Providence Railroad.	Providence and Wor. Road.
Western Railroad.	Concord Railroad.
Old Colony Railroad.	Fitchburg Railroad.
Schenectady Railroad.	Syracuse and Utica Road.
Balt. and Ohio Railroad.	Baltimore and Susq. Road.
Phila. & Reading Road.	Schuylkill Valley Road.
Central (Ga.) Railroad.	Macon and Western Road.

New York and Erie Railroad.

And other principal Railroads in the Western, Middle and Southern States.

E. & F. FAIRBANKS & CO.
St. Johnsbury, Vt.

Agents, { FAIRBANKS & Co., 81 Water St., N. York. A. B. NORRIS, 196 Market St. Philadelphia.

April 22, 1849. 1y*17

Patent India Rubber Steam Packing.

THIS article, made by the subscriber, who alone is authorised to make it, is warranted to stand as high a degree of heat *as any that has been or can be made by any person*—and is the article which has made the reputation of India Rubber Steam Packing and the demand therefor. A large assortment of all thicknesses requisite for any description of engines, steam pipes, valves, etc., constantly on hand and for sale by the manufacturer and patentee, who will give every information regarding its properties, mode of use, etc. at the warehouse. JOHN GREACHEN, JR.,
98 Broadway, opposite Trinity Church.

New York, October, 1849.

Ibbotson, Brothers & Co's CELEBRATED CAST STEEL AND

Best Cast Steel Royal Improved Files, well known as better adapted for Engineers' and Machinists' purposes than any now in use in the United States.

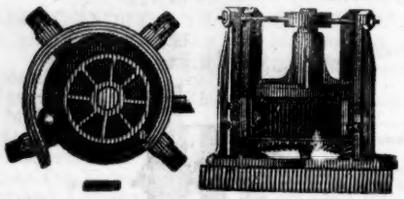
Every description of Square, Octagon, Flat and Round Cast Steel, Sheet, Shovel and Railway Spring Steel, etc., and Steel to order for any purposes—manufactured at their works in Sheffield—and universally known by the old stamp "Globe."

HENRY J. IBBOTSON, Agent.,
218 Pearl st., New York.

February 25, 1850.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phœnixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has give universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammersman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll sounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery *for making Spikes*, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, *Agent*,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNdersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNdersigned, the *Original Inventor* of the *Plate Wheel* with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

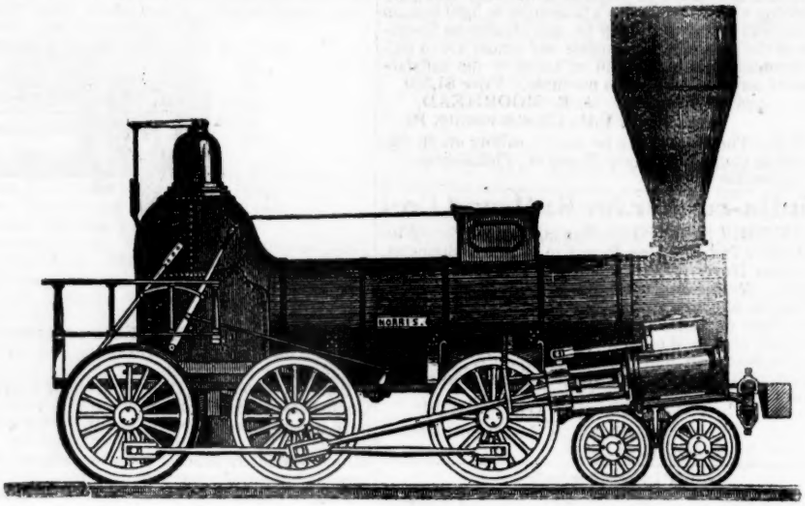
A. TIERS,
Point Pleasant Foundry.

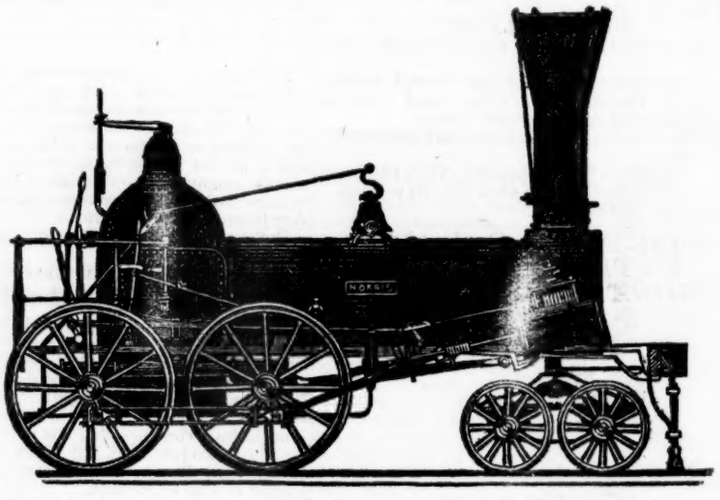
He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country. A. T.

Kensington, Philadelphia Co.,
March 12, 1848.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,





THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size.

Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tires are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE,
142 Front-street, New York.

☞ Orders for the above will be received and promptly attended to at this office. 32 1y.

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general asssortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest. P. A. BURDEN, *Agent*,
Troy Iron and Nail Factory, Troy, N. Y.

COLUMBUS, OHIO,

Railroad Car Manufactory.

RIDGWAYS & KIMBALL,

HAVE established at this central point, the manufacture of Passenger, Freight, Gravel and Hand Cars for Railroads, and assure all Western Railroad Companies that it will be their constant aim to procure the best materials and workmen, and to turn out the best kind of work at fair prices. Specimens may be seen on the Columbus and Xenia Railroad. The patronage of Railroad Companies is respectfully solicited. 1y8

To Inventors and Patentees.

OWEN G WARREN, ARCHITECT, Has had many years' experience as Agent for obtaining Patents, both in this country and Europe, and will transact such business promptly and reasonably. Persons at a distance can have their business done by correspondence—without the necessity of visiting this city or Washington. Office No. 94 Merchants Exchange, Wall st., corner of Hanover st., up stairs. 1y3

MR. HALE:—"The New England Car Co., having been engaged for the last six months in introducing the Vulcanized India-rubber Car Spaings upon the different railroads in this and other states, and having in particular introduced it upon the Boston and Worcester railroad with perfect success, were much gratified to find, by your paper of this morning, that the article had given satisfaction to the president of that corporation, and the terms of just commendation in which you were pleased to speak of it. But their gratification was scarcely equalled by their surprise, when, or arriving at the close of your paragraph, they found the results of all their labors attributed to a foreign source, with which the New England Car Co. has no connection. The material used on the Boston and Worcester railroad, and all the other railroads in this country, where any preparation of India-rubber has been successfully applied, is entirely an American invention, patented in the year 1844 to Charles Goodyear, of New Haven, Conn., and the application of it to this purpose and the form in which it is applied are the invention of F. M. Ray of New York. The only material now in use, and so far as has yet appeared, the only preparation of India rubber capable of answering the purpose, has been furnished under these patents by the New England Car Company, manufactured under the immediate inspection of their own agent. If any other should be produced, the right to use it would depend upon the question of its interference with Mr. Goodyear's patent. The New England Car Company have their place of business in this city at No. 99 State street, and are prepared to answer all orders for the Vulcanised India rubber Car Springs, of the same quality and of the same manufacture as those which they have already placed on your road, and most fo the other roads terminating in this city."

And yet Mr. Knevitt is using these experiments made upon the Springs of the Car Company to induce the public to purchase his springs, and is attempting to impose upon them the belief that the springs used were furnished by him! We ask whether such a course is honorable, or entitles his statements to much consideration from the public.

The above Springs are for sale 98 Broadway, New York, and 99 State street, Boston.

EDWARD CRANE Agent, Boston.
F. M. RAY, Agent, New York.

Boston, May 8, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.

G. A. NICOLLS,
Reading, Pa.

Railroad Lanterns.

COPPER and Iron Lanterns for Railroad Engines, fitted with heavy silver plated Parabolic Reflectors of the most approved construction, and Solar Argand Lamps; manufactured by

HENRY N. HOOPER & CO.,
No. 24 Commercial St. Boston.

August, 16, 1849. 6m33

NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, N. Y.

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes —obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.

Wrought Iron Tires made any required size, and Tire Bars bent and welded with dispatch.

Chilled Wheels for Cars, Tucks and Tenders, made from the toughest iron.

Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by

E. S. NORRIS.

April 11, 1849.

Hydraulic Cement.

KINGSTON LIME AND CEMENT CO.
OFFICE
271 PEARL-ST.
N. Y.

HYDRAULIC CEMENT, OF BEST QUALITY, manufactured at their works, for sale in lots to suit purchasers.

Also, Ground Lime, a superior article for Builders.

ISAAC FRYER, Sec'y.

January 19, 1850. 1y

Engine and Car Works,
PORTLAND, MAINE.

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of $250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

RAILROADS.

EASTERN RAILROAD.

WINTER ARRANGEMENT.

On and after Monday, October 8, 1849, trains leave Boston daily (Sundays excepted);

For Lynn, 7, 8½, 10 a.m., 12½, 2½, 4, 4½, 6½, p.m.
Salem, 7, 8½ 10, a.m., 12½, 2½, 4, 4½, 6½, p.m.
Manchester and Gloucester, 10 a.m., 4 p.m.
Newburyport, 7, a.m., 12½, 2½ 4½, p.m.
Portsmouth, 7, am., 2½, 4½, pm.
Portland, Me., 7, am., 2½, pm.

And for Boston,

From Portland, 8½ am., 4 pm.
Portsmouth, 7, 10½*, am., 6½*, pm.
Newburyport, 7½, 11½*, am., 3½ 7*, pm.
Gloucester, 7½, am., 1½pm.
Manchester, 8 am., 2 pm.,
Lynn, 7½, 8½*, 9½*, 10½ am., 12 55*, 2½* 4½* 8½* pm.
Salem, 7½, 8½*, 9*, 10½ am., 12 40*, 2½* 4½,* 8*, pm.

**Or on their arrival from the East.*

Freight trains each way daily. Office 17 Merchants' Row, Boston.

Feb. 3. JOHN KINSMAN, Superintendent.

ALBANY AND BUFFALO RAILROADS.—Four Trains daily, Sundays excepted, viz: Leave Albany, 6 a.m., 9 a.m., 2 p.m., 7 p.m. Reach Buffalo, 15 hours, 18 hours, 23 hours, 18 hours. Arrive from Buffalo, 7 p.m., 2½ a.m., 12½ m., 3½ p.m.

Passengers by the *Express Train* reach Buffalo from New York, and New York from Buffalo, in 24 hours. The Isaac Newton and Oregon connect at Albany with this Train. Baggage cars, with careful baggage masters, run through with all the trains.

For Schenectady, Saratoga Springs & Whitehall,

Leave Albany at 7 a.m. and 2 p.m. For Schenectady only at 6, 7 and 9 a.m. and 12½, 2 and 7 p.m. For Erie Canal packets at 7 a.m. and 7 p.m. By Plank Road from Schenectady to Saratoga at all hours by stages, etc.

The *Eastern Trains* leave Albany at 7 a.m. and 3 p.m. The wagons of the company take baggage *free* between railroads and steamboats at Albany.

E. FOSTER, Jr., Sec'y
Albany and Schenectady Railroad Co.

Albany, August, 1849.

BOSTON AND MAINE RAILROAD.

Winter Arrangement, 1850.
Outward Trains from Boston

For Portland at 7 am. and 2½ pm.
For Rochester at 7 am., 2½ pm.
For Great Falls at 7 am., 2½, 3½ pm.
For Haverhill at 7 and 9½ am., 2½, 3½, 5½, pm.
For Lawrence 7, 7½, 9½ am., 12m. 2½, 3½, 4½ 5½, pm.
For Reading 7, 9½ am., 12m. 2½, 3½, 4½, 5½, 7½, 9½ pm.
For Medford 7½, 9½ a.m., 12½, 2½, 5, 6½, 9½ p.m.
The Station in Boston is on Haymarket Square.

CHAS. MINOT, Super't.

January 10, 1850.

NEW YORK AND HARLEM RAILROAD.
NEW ARRANGEMENT.

On and after Wednesday, October 17th, 1849, the Cars will run as follows, (Sundays excepted) until further notice:

Trains will leave the City Hall, New York, for—
Harlem and Morrisania at 6½, 8, 10, 11, 12 am., 2, 3½, 4, 5, 6½ pm.
New Village, at 8½, 10, 12 am., 3½, 5, 6½ pm.
Fordham and Williams' Bridge, at 8½, 10, 12 am., 2½ 3½, 5, 6½ pm.
Hunt's Bridge, Underhill's and Hart's Corners, at 8½, 10 am., 3½, 5 pm.
Tuckahoe and White Plains, at 8½, 10 am., 2½, 3½, 5 pm.
Pleasantville, New Castle, Bedford, Mechanicsville, Purdy's, Croton Falls, and intermediate stations, on signal, 8½ am., 2½, 3½ pm.
Brewster's, Towner's, Patterson, Paulding's, South Dover, Dover Furnace, and Dover Plains, 8½ am., 2½ pm.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave
Harlem and Morrisiana at 6 08, 7½, 8 37, 9, 10 6, 12 am., 1 43, 3 07, 3½, 5, 5 47 pm.
New Village, at 5 58, 8 27, 9 56 am., 1 33, 2 57, 5 36 pm.
Fordham and William's Bridge at 5½, 8 14, 9 43, 10 57 am., 1 20, 2 44, 5 24 pm.
Hunt's Bridge at 8 04, 9 33 am., 2 34, 5 16 pm. On signal.
Underhill's, at 7 56, 9 23 a.m., 2 26, 5 10 p.m. On signal.
Tuckahoe at 7 53, 9 18, 10 40 am., 2 23, 5 08 pm.
Hart's Corners at 7 38, 9 03 am., 2 08, 4 54 pm.—On signal.
White Plains at 7½, 8 55, 10 20 am., 2, 4 47 pm.
Davis' Brook at 8 40, 10 11 am., On signal. 4 39 pm. On signal.
Unionville, 8 27, 10 11 am. On signal. 4 29 pm.—On signal.
Pleasantville at 8 20, 9 56 am., 4 24 pm.
Champaqua, at 8 10, 9 50 am. On signal. 4 18 pm. On signal,
New Castle, at 7 56, 9 38 am.. 4 07 pm.
Bedford at 7 46, 9 32 am., 4 02 pm.
Mechanicsville at 7 36, 9 22 am., 3 52 pm.
Golden's Bridge, 7 28, 9 17 am. On signal, 3 47 p m. On signal.
Purdy's at 7 20, 9 09 am., 3 39 pm.
Croton Falls, at 7½, 9 04 am.,3 34 pm.
Brewster's, at 8 50 am., 3 20 pm.
Towner's, at 8 35 am., 3 05 pm.
Paterson, at 8 27 am., 2 57 pm.
Paulding's, at 8 17 am., 2 47 pm.
South Dover, 8 02 am., 2 32 pm.
Dover Furnace, 7 55 am., 2 25 pm.
Dover Plains, at 7 45 am., 2 15 pm.

The trains for Harlem and Morrisiana leaving City Hall at 6½, 8, 10, 11, 12, 2, 4 and 6½, returning from Morrisiana and Harlem at 6 08, 7½, 9, 12, 1 43, 3 07, 3½ and 5 o'clock, will land and receive passengers at 27th 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th and 132d streets.

The Dover Plains train from New York at 2½ pm., returning leaving Dover Plains at 7½ am., will not stop between White Plains and New York, (except at Tuckahoe, Williams' Bridge and Fordham,) unless to leave passengers coming from above Croton Falls.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 27th street.

Freight Trains leave New York at 1 o'clock pm.—Returning, leaves Dover Plains at 12 o'clock m.

For Sunday Aarrangements, see hand bills.

M. SLOAT, Sup't.

NEW YORK AND ERIE RAILROAD. OPEN TO ELMIRA.

On and after the 8th of October, the trains will run as follows, (Sundays excepted):

THROUGH PASSENGER TRAINS from New York to Elmira, will leave the Company's Pier at the foot of Duane street, at 7 o'clock a.m. and 5 o'clock p.m. stopping at all the way stations.

From Elmira the through trains will leave for New York at 5 o'clock a.m. and 6½ p. m., stopping also at all the way stations.

A SPECIAL WAY TRAIN, for Port Jervis and intermediate stations, except Sufferns, will leave New York every Saturday at 3 p. m., and will leave Port Jervis for New York every Monday morning, at 4 55 o'clock.

A MILK TRAIN, with Passenger Cars attached, will leave Port Jervis for New York at 3 o'clock a.m. and returning will leave New York for Port Jervis at 3 p.m. Another milk train with passenger car, will leave Piermont for Otisville at 9 am., and returning leave Otisville at 4 55 p.m., connecting with the freight boats to New York. The milk trains do not connect with the P. and R. railroad.

FREIGHT.—Freight leaves New York every night for all the regular stations on the road. A freight train will leave Elmira every morning at 3 20 o'clock a.m. —A freight train will leave Port Jervis for New York every morning at 5 o'clock, and another at 8 a.m. with market freights.

A Special Train for cattle and other live stock, will leave Elmira on Tuesdays and Fridays at 12 20 p.m.; and from Port Jervis, for New York, on Wednesdays and Saturdays, at 8 40 a.m.

FARE from New York to Elmira $5 75. The intermediate stations in proportion.

COMMUTATION TICKETS, at lower rates, for the stations between New York and Port Jervis, can be purchased at the New York and Piermont offices.

The Steamboat ERIE leaves New York for Piermont every day at 3 o'clock, and returns on the arrival of the train from Elmira, arriving at New York at about 7½ p.m.

JAMES P. KIRKWOOD, Superintendant.

GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.		Between Augusta and Dalton.	Between Charleston, and Dalton.
		271 miles.	408 miles.
1st class	Boxes of Hats, Bonnets, and Furniture, per cubic foot	$0 18	$0 28
2d class	Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class	Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class	Flour Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
	Cotton, per 100 lbs.	0 45	0 70
	Molasses per hogshead	8 50	13 50
	" " barrel	2 50	4 25
	Salt per bushel	0 18	
	Salt per Liverpool sack	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freights payable at Dalton.

F. C. ARMS,
44*1y Sup't of Transportation.

LITTLE MIAMI RAILROAD.—SUMMER ARRANGEMENT.

CINCINNATI & SANDUSKY.

FIRST Passenger Train leaves Depot on East Front street, at 5 o'clock 10 minutes A. M. stops for breakfast at Morrow, and arrives at Springfield at 11 10 A. M. Leaves Springfield for Sandusky at 11 50 A. M.

Second Passenger Train leaves Depot 3 P. M. arrives at Springfield at 9 P.M. Passengers take tea at Springfield, and leaves for Sandusky at 9¾ P. M.

RETURNING—First Train leaves Springfield at 4 A. M. Stop for breakfast at Xenia, and arrives at Cincinnati at 10 15 A. M.

Second Train leaves Springfield at 2¾ P. M. Stop for tea at Morrow, and arrives at cincinnati, at 8¾ P. M.

Passengers taking the Morning Train arrive at Sandusky at 9 P. M. Those taking the Afternoon Train arrive at 7½ A. M. next morning, and proceed directly on in the boats.

Passengers for columbus, Zanesville, Wheeling, and intermediate towns, should take the 5, 10 A. M., Train.

The Ohi Stage Company are running the following Lines in connection with the Trains:

A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 3 o'clock, pm. Train from Cincinnati.

Fare from Cincinnati to Xenia			$1 90
Do	do	Springfield	2 50
Do	do	Sandusky City	6 50
Do	do	Buffalo	10 00
Do	do	Columbus	4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENT, Superintendent.

☞ The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value above that amount.

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

Summer Arrangement.
April 1st, 1849.—Fare $3.

Leave Philadelphia 8½ am., and 10 pm.
Leave Baltimore 9 am, and 8 pm.
Sunday—Leave Philadelphia at 10 pm.
" " Baltimore at 8 pm.

Trains stop at way stations.

Charleston, S. C.

Through tickets Philadelphia to Charleston, $20.

Pittsburg and Wheeling.

Through ticket, Philadelphia to Pittsburg, $12.
" " Wheeling, 13.

Through tickets sold at Philadelphia office only.

Wilmington Accommodation.

Leave Philadelphia at 12 m. 4 and 7 pm.
Leave Wilmington at 7½ am., 4½ and 7 pm.

Newcastle Line.

Leave Philadelphia at 2¼ pm.—Baltimore at 1½ pm
Fare $3.—Second class, $2.

N.B.—Extra baggage charged for.

I. R TRIMBLE, Gen. Supt.

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains

run daily, except Sundays, as follows:

Leave Baltimore at	9 am. and 3½ pm.
Arrive at	9 am. and 6½ pm.
Leave York at	5 am. and 3 pm.
Arrive at	12½ pm. & 8 pm.
Leave York for Columbia at	1½ pm. & 8 am.
Leave Columbia for York at	8 am. & 2 pm.

Fare:

Fare to York	$1 50
" Wrightsville	2 00
" Columbia	2 12½

Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg	$9
Or via Lancaster by railroad	10
Through tickets to Harrisburg or Gettysburg	3

In connection with the afternoon train at 3½ o'clock, a horse car is run to Green Spring and Owing's Mill, arriving at the Mills at 5½ pm.
Returning, leaves Owing's Mills at 7 am.

D. C. H. BORDLEY, Sup't.
31 1y Ticket Office, 63 North st.

PHILADELPHIA & READING RAILROAD. Passenger Train Arrangement for 1848.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock am.

The Train from Philadelphia arrives at Reading at 12 18 m.

The Train from Pottsville arrives at Reading at 10 43 am.

Fares.		Miles.	No. 1.	No. 2
Between Phila. and	Pottsville,	92	$3.50 and	$3.00
" "	Reading	58	2.25 and	1.90
" Pottsville	"	34	1.40 and	1.20

Five minutes allowed at Reading, and three at other way stations.

Passenger Depot in Philadelphia corner of Broad and Vine streets. 8tf.

BALTIMORE AND OHIO RAILROAD AND WASHINGTON BRANCH.

On and after January 1, 1850, Passenger Trains will run as follows:

Leave Baltimore for Ellicott's Mills, Frederick, Harper's Ferry, Martinsburg, Hancock and Cumberland, every morning at 7½ o'clock. This line carries the Great Mail, and connects with Post Coaches at Cumberland, for Wheeling and Pittsburg, over the National Road. Also with the Winchester Trains, at Harper's Ferry. N.B.—Passengers for Pittsburg take the steamers of the Monongahela slack water navigation at *Brownsville*, only 76 miles from Cumberland.

Leave Baltimore for Ellicott's Mills, Frederick and Harper's Ferry, daily, except Sunday, at 4½ p.m.

Leave Baltimore for Washington City, daily, at 6 a.m. and 5 p.m.—daily, except Sunday, at 9 a.m. The early train connects with the Great Southern Line, via Fredericksburg and Richmond, to Charleston.

Leave Cumberland for Baltimore, etc., at 8½ a. m., daily, connecting with the train from Winchester at Harper's Ferry—with the Evening Train to Washington City, at the Relay House—and with the Evening Train to Philadelphia, at Baltimore. Time for arriving at Baltimore, 5½ p.m.

Leave Harper's Ferry for Baltimore, daily, except Sunday, at 7½ a. m—taking in Passengers who leave Frederick at 8½ a.m.

Leave Washington for Baltimore, daily, at 6 a.m. & 5½ p.m., and *daily, except Sunday*, at 9½ a. m. The early train connects at the Relay House with the morning line to Cumberland and the West, and at Baltimore with the day line to Philadelphia and New York.

Through tickets are sold at *Philadelphia and Baltimore* for Pittsburgh and Wheeling, and at *Philadelphia and New York* for Charleston, S. C., at the following

RATES OF FARE.

	To Pittsburg. In winter.	To Pittsburg. Summer.	Wheeling. Win.	Wheeling. Sum.	Charleston.
From Philadelphia,	$13	$12	$14	$13	$20
" Baltimore,	11	10	12	11	
" New York,					20

Passengers leaving New York not later than the afternoon line via Newark, etc., reach Baltimore in season to take the next morning's lines to the South and West.

Passengers leaving Cumberland in the morning and Washington in the evening lines, reach Baltimore in season to proceed to Philadelphia by the evening train at 8 p. m.—so as to reach New York before noon the next day.

An Emigrant line by burthen cars, leaves Baltimore every morning, except Sundays, at 4 o'clock—connecting with a line of the previous day from N. York —and at Cumberland with a wagon line to Pittsburg or Brownsville and Wheeling. Fare by this line:

From New York to Pittsburg,		$8 00
" Philadelphia	"	6 50
" Baltimore	"	5 00

By order, J. T. ENGLAND, Agent.

SOUTH CAROLINA RAILROAD.—A PASSENGER Train runs daily from Charleston, on the arrival of the boats from Wilmington, N. C., in connection with trains on

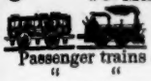
the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tuscumbia Railroad in N. Alabama.

Fare through from Charleston to Montgomery daily	$26 50
Fare through from Charleston to Huntsville, Decatur and Tuscumbia	22 00

The South Carolina Railroad Co. engage to receive merchandize consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

JOHN KING, Jr., Agent.

CENTRAL RAILROAD FROM SAVANNAH TO MACON, (Ga.) 190¼ miles.



Passenger Trains leave Savannah and Macon daily at 7 a.m.

Passenger trains arrive daily at Savannah, 6 15 p.m.
" " " " Macon, 6 45 p.m.

This road, in connection with the Macon and Western road from Macon to Atlanta, and the Western and Atlantic road from Atlanta to Dalton, now forms a continuous line of 391½ miles in length* from Savannah to Dalton, Murray county, Ga. and with the Memphis Branch railroad, and Stages connect with the following places:

Tickets from Savannah to	Macon,	$5 75
" " "	Atlanta,	9 50
" " "	Augusta,	6 50
" " "	Columbus,	15 00
" " "	Opelika,†	17 00
" " "	Jacksonville, Ala.,	20 00
" " "	Talladega, Huntsville Decatur, Ala.,	22 00
" " "	Tuscumbia, Ala.,	22 50
" " "	Tuscaloosa, Ala.,	
" " "	Columbus, Miss, Aberdeen, " Holly Springs	28 00
" " "	Nashville, Tenn. Murphreesboro' Columbia, do.,	25 00
" " "	Memphis, do.,	30 00

An extra Passenger Train leaves Savannah on Saturdays, after the arrival of the Steam-ships from New York, for Macon, and connects with the Macon and Western railroad; and on Tuesdays, after the arrival of the Macon and Western cars, an extra Passenger Train leaves Macon to connect with the Steam ships for New York.

Stages for Tallahasse and intermediate places connect with the road at Macon, Mondays, Wednesdays, and Fridays, and with Milledgeville at Gordon daily.

Passengers for Montgomery, Mobile and New Orleans take stage for Opelika from Barnesville through Columbus, a distance of 97 miles, or from Griffin thro' West Point, a distance ot 93 miles.

* The Western and Atlantic railroad will soon be completed between Dalton and Chattanooga, a distance of 423½ miles from Savannah, of which due notice will be given.

† Head of the West Point and Montgomery railroad, on which the fare to Montgomery is about $2.

RATES OF FREIGHT FOR MERCHANDIZE GENERALLY, FROM SAVANNAH TO MACON.

Measurement Goods.—Boxes of hats, bonnets, furniture, shoes, saddlery, dry-goods, and other measurement goods, per cubic foot - - 13 cents.
Crockery Ware, in crates, boxes or hhds, per cubic foot. - - - - - 10 "
Goods by Weight, 1st class.—Boxes of glass, paints, drugs & confectionary, per 100 lbs., 50 "
2d class—Sugar, coffee, rope, butter, cheese, lard, tobacco, leather, hides, copper, sheet and hoop iron, tin, hard and hollow ware, rice, boxes soap and candles, bagging, and other heavy articles not enumerated below, per 100 lbs., - - - - - 45 "
3d class—Flour, bacon, liquors, pork, beef, fish, tallow and beeswax, per 100 lbs., 40 "
4th class—Mill-gearing, pig and bar iron, grind and millstones, nails, spikes and coal, 100 lb. 30 "
Barrels of beets, bread, crackers, potatoes, ice, fruit, oysters, onions, and all light bbls, each, 75 "
Oil and molasses per hhd., (smaller casks in proportion) - - - $6 00 "
Salt per sack not exceeding 4 bushels, - 50 "

☞ Goods consigned to Thos. S. Wayne, Forwarding Agent, Savannah, will be forwarded free of commission.

WM. M. WADLEY, Supt.

Savannah, Ga., February 24, 1850.

THE WESTERN AND ATLANTIC RAILROAD.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur, and Tuscumbia, Alabama, and Memphis, Tennessee.

On the same days the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT,
Chief Engineer

GREAT NORTHERN & SOUTHERN MAIL ROUTE.

From New York to Charleston, S. C. daily, via *Philadelphia, Baltimore, Washington City, Richmond, Petersburg, Weldon and Wilmington, N. C.*

Travellers by this route, leaving New York at 4½ p. m., Philadelphia at 10 p.m., and Baltimore at 6 a.m., proceed without delay at any point on the route, arriving at Richmond, Va., in a day, and at Charleston, S. C., in two and half days from New York.

Through tickets from New York to Charleston, $20 00
" " Baltimore to Richmond, 7 00
" " " " Petersburg, 7 50

For tickets to Richmond and Petersburg, or further information, apply at the *Southern Ticket Office, adjoining the Washington Railroad Ticket Office, Pratt Street, Baltimore* STOCKTON & FALLS.

October, 1849.

ST. LAWRENCE & ATLANTIC RAILROAD COMPANY.

Notice is hereby given that the Trains run twice per day between

Montreal and St. Hyacinth, leaving each terminus alternately, until further notice.

Leaving St. Hyacinth at - - 7 am.
" " - - 3 pm.
Leaving Montreal at - - 10 am.
" " - - 6 pm.

THOMAS STEERS, *Secretary.*

May 31, 1849.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, *Patterson, N. J.* The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tires; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tires; Axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
Patterson, N.J. or 74 Broadway, New York.

NOTICE TO
Superintendents of Railroads.

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

P. B. TYLER.

(COPY.)

UNITED STATES PATENT OFFICE,
Washington City, D.C., April 28th, 1846.

SIR: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully, EDMUND BURKE,
Commissioner of Patents.

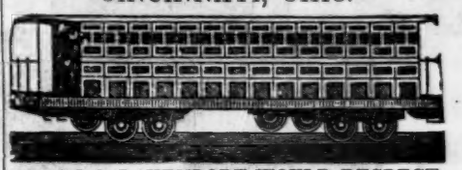
To Philos B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENDLETON, Agent, 149 Hudson St., New York.

ENGINEERS' AND SURVEYERS'
INSTRUMENTS MADE BY
EDMUND DRAPER,
Surviving partner of
STANCLIFFE & DRAPER.

No. 23 Pear street, below Walnut,
" 0 near Third, Philadelphia.

CAR MANUFACTORY
CINCINNATI, OHIO.



KECK & DAVENPORT WOULD RESPECTfully call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.

Cincinnati, Ohio, Oct. 2, 1848. 44tf

C. W. Bentley & Co,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Balttmore St. Bridge,

BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupyidg but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fillings for Steam, Water, Gas, etc., constantly on hand,

Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,

CORNER SCHUYLKILL 2D AND HAMILTON STS.,

SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.

Philadelphia, June 16, 1849. 1y25

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia.

Jan. 20, 1849.

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by
H. B. TEBBETTS,
No. 40 Wall St., New York.

May 12, 1849. 1m19

FOWLER M. RAY'S
METALLIC INDIA RUBBER CAR SPRINGS.

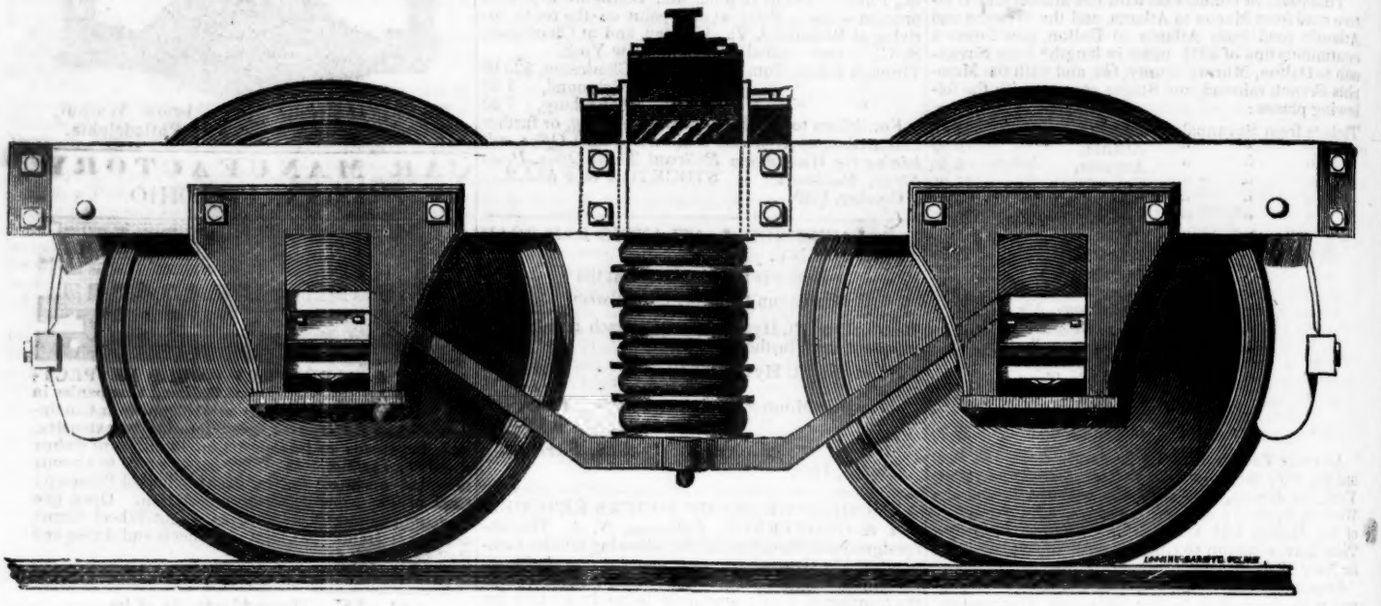


Fig. 1.

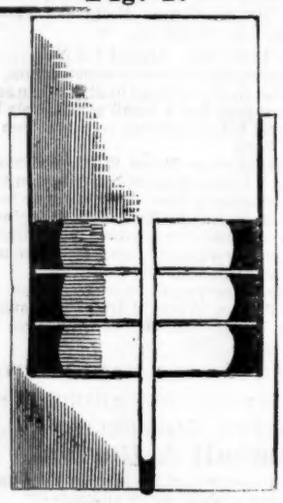


Fig. 2.

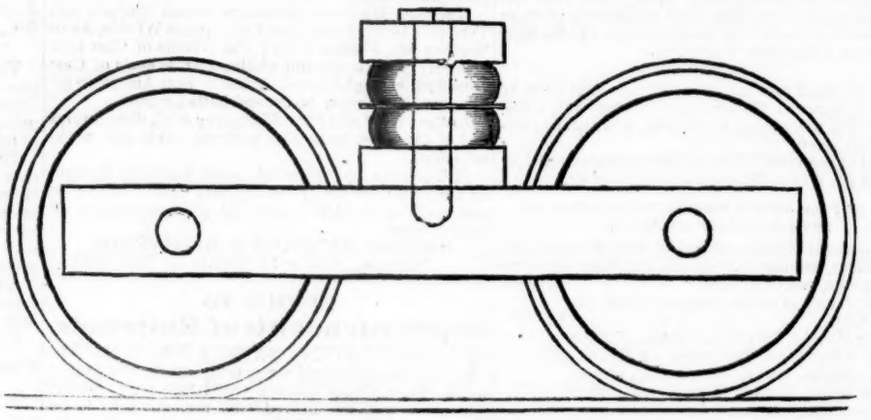
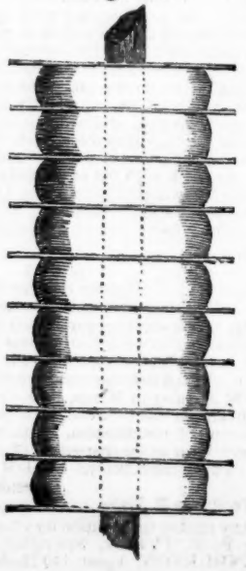


Fig. 3.



So much has been published for the purpose of misleading the public in regard to the inventorship of the India-rubber Railroad Spring, patented in the United States by Mr. W. C. Fuller, that the New England Car Company, proprietors of this invention, have deemed it proper, for the information of Railroad Companies, Car Builders and the public generally, to lay before them the facts upon which they found their claim to this invention, and to a Patent therefor.

Cut No. 1, Represents a cross section of the first model made by Mr. Tucker, under the direction of Mr. Ray, in the summer of 1844, and to which Mr. Tucker, Mr. Bradley and Mr. Bannester testify as being the model marked "B."

Cut No. 2, Represents the model made in 1845, to which Mr. Osgood Bradley and Gen. Thos. W. Harvey have testified.

Cut No. 3, Represents a rough sketch made by Mr. Ray in 1844, which he gave to a man about departing for England to take out some patents, who promised to write to Ray after his arrival in that country—which promise he has probably forgotten.

Mr. W. C. Fuller, of England, patented the above Spring in that country on the 23d October, 1845. He filed his enrollment April 23d, 1846, and on the 22d October, 1846, he took out a patent in the United States under the title, "For Improvement in Railway Carriages," when the improvement consisted in the spring, and not in the carriage.

The reader will perceive by the annexed testimony, that the India-rubber Railroad Car Spring was invented by Mr. Ray about two years previous to the date of Mr. Fuller's enrollment.

The Depositions are omitted for want of room, but will be published in full in the course of a few weeks.

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HENRY V. POOR,
136 Nassau Street.